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Sell-side analysts' valuation method choices and the role of ESG information in renewable energy valuations

Case Neste Oyj

Master's Thesis
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Abstract of master's thesis

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Abstract

The objective of this research was to gain understanding of the drivers behind sell-side analysts' valuation method choices for valuing a particular company, which have largely remained unknown. The phenomenon was explored through a renewable energy case company Neste Oyj. Additionally, due to the context of renewable energy valuations, the study sought to investigate how environmental, social and governance information influence valuations. The main research question of the study was: What affects analysts' valuation method choices directly linked to a firm's target price? The secondary research question, to address the context of renewable energy valuations, was: What is the role of environmental, social and governance information in the context of renewable energy valuation?

This research followed a qualitative research approach. Empirical data was gathered from 6 in-depth semi-structured interviews of sell-side analysts covering the case company Neste Oyj. The interviews were based on the content analysis of the interviewed analysts' latest valuation reports on Neste Oyj. Further, the interviews were constructed acknowledging prior research. The interviewees were based in the UK and the Nordics. Interviews were conducted either face-to-face or by phone. Thus, complimentary research material obtained from interviewees' was considered. Further, the research approach was abductive.

The findings of the research supported the acknowledgement that the decision-environment that analysts face is multidimensional, having various drivers affecting choices made. First, the findings corroborated prior empirical evidence on factors influencing valuation method choices, such as client preferences. Secondly, the research found indications of theoretically suggested factors and thirdly, identified new factors. The factors influencing valuation method choices were categorized under four groups of valuation method drivers, constructing a framework for assessing the phenomenon: 1) employer related, 2) market deriving, 3) method characteristics and personal preferences and 4) firm specific drivers. Additionally, the research noted analysts' changing valuation method preferences: the shift from the dominance of PE to preference of enterprise value multiples. Secondarily, the research found ESG information to play a secondary role in the context of renewable energy valuations and noted UK and Nordic analysts differing perceptions on the valuation relevance of ESG-information. ESG did not influence valuation method choices or target prices explicitly. However, for Nordic analysts, ESG-information could influence the stock recommendation and be present in screenings or reports.

Keywords analyst, valuation method choice, ESG, renewable energy

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Tiivistelmä

Tämän tutkimuksen tavoitteena oli lisätä ymmärrystä analyytikkojen valuaatiometodivalinnoista, jotka ovat pitkälti pysyneet tuntemattomina. Ilmiötä tutkittiin uusiutuvan energian sektorilla toimivan tapaustutkimusyrityksen Neste Oyj:n kautta. Lisäksi, johtuen uusiutuvan energian kontekstista, tutkimus pyrki selvittämään miten ympäristö-, sosiaalinen ja hallinnollinen (ESG) informaatio vaikuttaa yrityksen arvostukseen, 'valuaatioon'. Tutkimuksen päätutkimuskysymys oli: Mikä vaikuttaa analyytikoiden valuaatiometodivalintaan, johon tavoitehinta suoraan linkittyy? Tutkimuksen toinen tutkimuskysymys, joka pyrki ottamaan huomioon uusiutuvan energian kontekstin, oli: Mikä on ympäristö-, sosiaalisen ja hallinnollisen (ESG) informaation rooli uusiutuvan energian valuaation kontekstissa?

Tutkimus toteutettiin laadullisena tutkimuksena. Tutkimusaineisto kerättiin kuudella syvällisellä puolistrukturoidulla haastattelulla Neste Oyj:ta seuraavilta analyytikoilta. Haastattelut perustuivat analyysiin haastateltujen analyytikoiden viimeisimmistä valuaatioraporteista tapaustutkimusyrityksestä. Haastattelujen pohjalla vaikutti myös aiempi tutkimus aihealueesta. Haastateltavat olivat Iso-Britanniasta ja pohjoismaista. Haastattelut toteutettiin joko kasvotusten tai puhelimen välityksellä. Lisäksi, analyytikoiden toimittavaa täydentävää tutkimusaineistoa hyödynnettiin. Tutkimusote oli abduktiivinen.

Tutkimuksen tulokset vahvistivat näkemystä, että analyytikoiden päätöksentekoympäristö on moniulotteinen. Analyytikoiden valuaatiometodivalintoihin vaikuttavat monet tekijät. Ensimmäiseksi, tutkimustulokset tukivat aiempia löydöksiä metodivalintoihin vaikuttavista tekijöistä, kuten asiakkaiden mieltymykset. Toiseksi, tutkimus löysi viitteitä teoreettisesti esitettyjen metodivalintatekijöiden tueksi, ja kolmanneksi tutkimus tunnisti uusia tekijöitä. Tekijät jaoteltiin neljän kategorian alle, rakentaen viitekehyksen valuaatiometodivalintojen tuleville tutkimuksille: 1) työnantajaan liittyvät tekijät, 2) markkinoilta tulevat tekijät, 3) metodien piirteet ja henkilökohtaiset preferenssit ja 4) yritykseen liittyvät tekijät. Lisäksi, tutkimus tunnisti muutoksen analyytikkojen valuaatiometodimieltymyksissä: siirtymä PE:n hallitsevuudesta yritysarvopohjaisiin multippeleihin (EV/EBIT; EV/EBITDA). Toisarvoisesti, tutkimus havaitsi ESG-informaatiolla olevan sekundäärinen rooli uusiutuvan energian valuaatioissa. Iso-Britannian ja pohjoismaiden analyytikoiden näkemykset erosivat toisistaan. ESG-informaatio ei vaikuttanut analyytikoiden valuaatiometodivalintaan tai tavoitehinnan muodostukseen eksplisiittisesti. Kuitenkin, pohjoismaisilla analyytikoilla ESG-informaatio saattoi vaikuttaa osto- tai myyntisuositukseen tai olla läsnä raporteilla tai ennakkoseulonnassa.

Avainsanat analyytikko, valuaatiometodivalinta, ESG, uusiutuva energia

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To this research culminates my path, full of learnings, in Aalto University School of Business. The topic of analysts' valuation method choices enabled cumulating knowledge on a field of interest continuing to inspire me: behavior in the context of accounting and finance.

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1. Introduction

1.1 Background and motivation

In attracting capital, there are uninformed investors who require a premium for the risk they carry compared to informed investors (Easley & Maureen, 2004). Further, investors do not make full use of available accounting information (Day, 1986), perhaps due to limited capability to analyze the information (Lee & Tweedie, 1977). Consequently, investors consider sell-side analysts, instructing to e.g. to sell or buy stocks, better informed (Day, 1986). Thus, wide analyst coverage (see 1.3. Key concepts) increases the perceived information amount received by the uninformed investors. Even though a single analyst forecast of the covered firm includes uncertainty, the consensus of multiple analysts provides a more solid basis for decisions. (Easley & Maureen, 2004) Whereas, from the company point of view, the implication of increased analyst coverage is a lower cost of capital. (Easley & Maureen, 2004)

Throughout years, there has been effort to improve knowledge of the equity markets through scrutiny of analysts' work, through covering e.g. valuation methods and information utilized in valuations. (Ramnath et al., 2008; Brown et al, 2015) However, few studies have focused on choices behind valuation methods (Flöstrand, 2006). During the last decade, some studies have contributed to that research avenue as a secondary focus (see Demirakos et al., 2004; Imam et al. 2008). For example, Imam et al. (2008) gain empirical evidence of factors influencing valuation method choices, such as the impact of customer preferences. Thus, they suggest the need for further research on "*the balance between the use of rational valuation techniques and more traditional earnings-based multiples (Imam et al., 2008, p. 530)".*

Despite of research and theory on sell-side analysts, their decision environments, and hence processes and drivers, remain an important avenue of further research to enlarge understanding of the equity markets and the context within which accounting is exercised. (Ramnath, et al. 2008; Bradshaw, 2011; Brown et al. 2015) The incomplete knowledge on analysts' valuation method choices present a research gap addressed as the primary focus in this study. This study will assess the phenomenon through a case company to gain a detailed

outlook of the underlying drivers for valuation method choices. The case company subject to research is a publicly listed energy sector firm Neste Oyj. Neste Oyj operates both in the traditional fossil fuels sector and in the renewable fuels sector. The company consists of three main divisions: Oil Products, Renewable Products and Retail.

To combat present environmental issues renewable energy technologies and efficient energy utilization have been recognized as the most promising solutions (Dincer, 1999; Bergmann et al., 2006). Taking a long-term investment perspective, many technologies in the renewable energy sector have become cost competitive with the ones in the fossil energy sector (Dincer, 1999). The question rises how do analysts value such developments in a continuously evolving sector and do environmental, social and governance (ESG) issues influence valuation method choices. Especially, as there is growing demand of the "*use of environmental factors in decision-making by capital market participants"* (Campbell & Slack, 2011, p.55). Even though prior research has assessed analysts' use of information, what information is considered in the context of renewable energy sector has not gained focus. Due to the context of operating in the renewable energy sector, the scrutiny of the case company was found interesting.

Thus, the study seeks secondarily to explore if analysts consider environmental social and governance (ESG) information relevant for valuations in the renewable energy sector, even though e.g. ESG ratings have been criticized for lack of transparency and that ratings have subjectivity inherently (Stubbs & Rogers, 2013). ESG link with analyst valuations in the renewable energy sector has hardly been studied and thus, is a somewhat rare phenomenon. Few studies and scholars have argued for and against ESG relevance for analysts' valuations (see Campbell & Slacks, 2011; Nielsen & Noergaard, 2011). To conclude, this study seeks to bring insight to analysts operating environments; primarily to what influences analysts' valuation method choices and secondarily to the impact of ESG information in analysts' valuations in the context of the renewable energy sector.

The importance of the research from the perspective of understanding firms' decision-making and controls derives from investors (fund managers, institutional investors) influence on steering firms' executive managements' actions. (Imam et al. 2008) Thus, Imam et al. (2008) assert the necessity of further contributing to the understanding of the intercourse of finance

and financial accounting information through the assessment of the interests of various actors in financial accounting disclosures and other information within the social construction of the equity market.

The qualitative research approach was chosen due to the goal of understanding behavior (Hirsjärvi and Hurme, 2011), and the case-study method as it enables the focus is on gaining deeper understanding of the phenomenon (Vaivio, 2008). The primary research material consists of six in-depth semi-structured interviews of analysts covering Neste Oyj based on the content analysis of the interviewee's valuation reports on Neste Oyj. The interviews have been conducted in January 2017. All interviewees work for brokerage firms. The analysts are based in the Nordics and The United Kingdom. Interviews were conducted either face-to-face or by phone depending on the country the analysts were based in. Thus, the study is limited to examining sell-side analysts in brokerage firms, excluding the scrutiny of the practices of credit analysts, buy-side analysts and investors.

1.2 Research goals and questions

The goal of this research is to gain understanding of the drivers behind analysts' valuation method choices for valuing a particular company. Additionally, the study seeks to investigate how environmental, social and governance information influence valuations in the context of the renewable energy sector. The primary and secondary research questions regarding how analysts value renewable energy firms are as follows:

1. What affects analysts' valuation method choices directly linked to a firm's target price?
2. What is the role of environmental, social and governance information in the context of renewable energy valuation?

To aid the exploration of the primary research question, the valuation methods currently in use and the information considered relevant for valuations – both financial accounting and non-financial information – and forecasts in the renewable energy sector are sought after. To understand the role of ESG-information on analysts' current practices, including the

dynamics of analysts and ESG-rating teams within the brokerage organizations, and perceptions on future materiality are studied.

1.3 Key concepts

Sell-Side analysts

In this study, the term analyst is used exclusively to refer to sell-side analysts. Sell-side analysts cover publicly traded companies with the aim of constructing reports by analyzing the past and future performance of the companies followed to provide stock recommendations. Sell-side analysts work for brokerage companies and their reports are consumed by investors trading publicly listed securities. Buy-side analysts are employed often by institutional investors or e.g. mutual funds owning security portfolios. Buy-side analysts benefit from sell-side analysts' valuation reports. Thus, where multiple parties benefit from sell-side analysts' reports, the output of buy-side analysts' work is solely enjoyed by a single party. (Fogarty & Rogers, 2005)

Analyst coverage

Analyst coverage refers to the regular and continuous evaluation of a company by a sell-side analyst. Wide analyst coverage refers to several analysts simultaneously following and analyzing company performance resulting in valuation reports and stock recommendations targeted to the buy-side.

Valuation & forecasting

Valuation refers to the mathematical calculations, quantitative and qualitative factors by which the market value of a company is determined. Forecasting is understood in this study as a part of the valuation process consisting of predicting strategic plans and their influence in financial performance and company value. Together valuation and forecasting form prospective analysis. (Palepu et al. 2013, p. 239)

ESG

ESG – environmental, social and governance – is defined in this study according to Cerin's (2010) framework dividing environmental issues to the following categories environmental preparedness, company specific environmental performance, product/market specific environmental preparedness and environmental impact category. ESG information is either disclosed by the firm or the market. ESG factors have been categorized previously under e.g. socially responsible investments (SRI) or corporate social responsibility (CSR).

1.4 Research structure

The rest of the study is structured as follows. Chapter 2 discusses the theoretical background for the study. First, analysts' equity market role is discussed. Subsequently valuation literature is presented, first introducing an example of a roadmap for the valuation process, followed by observations of prior research of valuation method use, information and its sources considered relevant. Environmental social and governance information is considered separately, as it is increasingly by stakeholder groups (Orens & Lybaert, 2007). Lastly, prior evidence of drivers behind valuation method choices is assessed, followed by a summary.

Chapter three introduces the methodology of the study, discussing the choice of semi-structured interviews applied. It outlines the research material, data collection, analysis and evaluates the trustworthiness of the study. The interviews were constructed upon analysts' reports content analysis and evidence from prior research. The interview material was categorized under themes and analyzed. Categorization to themes was influenced by gained knowledge through the theoretical background and topics risen during interviews.

Chapter four presents the findings of the study, with the order following the research questions. First the valuation methods used and the reasoning behind the choice of methods is introduced, followed by practices of information use, especially from ESG perspective. Chapter five discusses the theoretical implications and builds a framework for further scrutiny of the phenomenon, followed by chapter six concluding the study and suggesting avenues for further research.

2. Theoretical background

According to Dincer (1999) many technologies in the renewable energy sector have already become cost competitive with fossil technologies in the long-term perspective. The renewable energy sector development has been long supported by national incentive programs (Dincer, 1999) and the growth rates in the renewable energy sector have been considerable (Inchauspe et al., 2015). Thus, it is interesting to study analysts' valuation practices within the renewable sector, which has not received attention in valuation research.

This chapter presents the theoretical background of the study. Firstly, sell-side analysts' equity market role is discussed through the context within which analysts work, the brokerage firms, and by assessing the role of analyst coverage in equity markets. Secondly, after covering the context of the phenomenon, firm valuation theory and valuation methods are explored subsequently. Thirdly, to gain deeper understanding of valuation practices, information is considered. Due to the context of renewable energy valuations, a growing part of information considered in valuing a company or demanded to be incorporated in the process, ESG (environmental, social and governance information) is examined separately. It traditionally has not had focus in valuation research or practice. Such information has only begun emerging after the millennium. Little is yet known of analysts' actual practices in this area. (Jemel et al., 2011) Lastly, this chapter investigates valuation method choices and points to the research gap.

2.1 Analysts' equity market role

Sell-side analysts follow publicly traded companies and form reports of their analyses of the past and future performance of the companies followed. The reports include stock recommendations for investor actions (e.g. sell, buy or hold) based on estimated future cash flows. In order to forge analyses and project future earnings per share, analysts gather information from various sources and assemble entireties of obtained information. (Fogarty & Rogers, 2005) Analysts can be generalists or specialized in an industry. Specialization enables the utilization of industry knowledge in evaluations. Sell-side analysts work for

brokerage companies and the users of their reports are investors trading publicly listed securities. (Fogarty & Rogers, 2005)

This section aims at clarifying the analysts' role in the equity market. Subsection 2.1.1. discusses brokerage firms shortly and the context within which sell-side analysts work. Subsection 2.1.2 focuses more deeply on the analyst's role in the equity markets through the exploration of literature on the value of analyst coverage to investors and publicly traded companies.

2.1.1 Brokerage firms

Sell-side analysts covering companies work for brokerage firms, such as investment banks. Analysts' work of covering publicly traded companies accelerate trading activities for brokerage firms. Thus, brokerage firms are intermediaries between investors and firms in stock trading activities. Thus, typically analysts follow high-quality firms that have trading potential. (Irvine, 2000) Hence, not all stocks are equally covered. Brokerage firms decide upon forecasting the earnings and issuing a stock recommendation for a firm through the evaluation of the resources absorbed. Resource consumption is compared to the expected revenue generated by commissions and the volume of trading activities following the release of the analyst's report. The commissions are affected by the size of the firm under valuation and the number of brokers covering the firm. (Brennan & Hughes, 1991)

Brokerage firms receive compensation through brokerage commissions for generating and providing information to investors through sell-side analysts. Further they are independent actors in the equity market. Firms under evaluation also benefit from this arrangement, especially if the managements of the firms have plausible information that is not available from public sources. Investors are argued to invest only in stocks that are familiar to them and the brokerage firm is the service provider to gain that knowledge from. (Brennan & Hughes, 1991)

2.1.2 Analyst coverage

Analyst coverage refers to the regular and continuous evaluation of a company by a sell-side analyst. Wide analyst coverage refers to several analysts simultaneously following and analyzing company performance resulting in reports and stock recommendations targeted to the buy-side: investors, e.g. mutual funds.

Broad sell-side analyst coverage of a company reduces the cost of its capital. Analyst coverage decreases information asymmetry, risk related to it and thus the premium required by investors. (Lang & Lundholm, 1996) This was supported by Block (1999), who found security market analysts to dismiss the efficient market hypothesis, which assumes all publicly available information to be incorporated in share prices. Reduced information asymmetry derives from increased amounts of information available for investors, new information created by analysts and improved management disclosure credibility enhanced by market intermediaries such as analysts. Thus, analyst following can be seen as tools to diminish agency conflicts between outside investors and managers as analyst following is linked to informative disclosures. (Healy & Palepu, 2001; Asquith et al., 2005) Monitoring company management is one of the most important purposes of financial analysts (Orens & Lybaert, 2010). Also Fogarty & Rogers (2005) discuss analysts' roles as intermediaries of information. Analysts may gain access to management information – such as management attitudes to plans – that is out of reach of the investing public. They support the statement that analysts improve management disclosure credibility through redundancy and repetition through their coverage. (Fogarty & Rogers, 2005) However, as a contradictory research result to Healy & Palepu (2001) and Fogarty & Rogers (2005) to name a few, De Franco (2004) found suggestions of analysts being primarily substitutes for firm disclosures, especially in large organizations with volatile performance.

As intermediaries and creators of new information, analyst following can increase transparency (Lang, Lins, & Miller, 2004). Nevertheless, analysts' forecasts are influenced by their conflicting incentives distorting outputs. (Healy & Palepu, 2001) Even though individual forecasts and valuations involve uncertainty and inaccuracy, the consensus of many analysts decreases the uncertainty involved with forecasting future earnings providing a grounds for

more sophisticated investor decisions (Easley & Maureen, 2004; Fogarty & Rogers, 2005). To stress analysts' unique role, Fogarty and Rogers (2005) note that investors habit of not seconding analysts' reports or making their own calculations can end up as a self-fulfilling prophecy as analyst recommendations are highlighted by the media – and investors' actions follow analyst recommendations without expressing doubt or criticality.

From the firm perspective, increased analyst coverage can be gained by increasing voluntary disclosure. This is due to the decreased costs for analysts to acquire information (e.g. private management information disclosures) and increased accessibility. (Lang & Lundholm, 1996) (Shehata, 2014) Consequently firms with increased disclosures enjoy improved analyst accuracy in earnings forecasts – and thus reduced volatility in forecast revisions – and less dispersion in forecasts constituting the analyst consensus (Lang & Lundholm, 1996). To conclude, firm voluntary disclosure can spur from the threat of undervaluation and aim to lower the cost of capital with broader analyst coverage (Shehata, 2014), thus increased analyst coverage is associated with higher valuations (Lang et al., 2004)**.** Analyst reports have a direct effect on share prices (Ramnath et al., 2008).

Analysts' reports with recommendations supported by forecasted financials are only the peak of the iceberg of the valuation process. The process starts from collection of relevant data and continues with the evaluation and analysis of data. Data collected relate to both past and projected future performance. The report typically has the following elements: 1) earnings forecasts, 2) a stock recommendation and 3) a price target. Often the recommendations are further supported by qualitative and quantitative analysis. (Asquith et al., 2005) However, analysts work with an enormous set of data collected from different sources in a way which makes the calculation behind the recommendation difficult to trace back (Fogarty & Rogers, 2005).

Researchers have studied the analysts during the past years from different angles, including valuation models, information used in valuations and forecasts and market reactions to e.g. forecast and recommendation revisions (Arnold and Moizer 1984; Day, 1986; Asquith et al., 2005; Brown et al., 2015). Section 2.2. assesses valuation and forecasting. The following subsections will summarize valuation literature and prior research on the valuation methods

and their use in practice (subsection 2.2.1. and 2.2.2.) and information considered relevant in them (2.2.3.-2.2.4) – the process behind the reports and recommendations. Of which 2.2.4. traces research on the decision-usefulness and rise of environmental social and governance information in valuations and demands from stakeholders. Subsection 2.2.5. gathers together what is currently known of why analysts choose particular valuation methods with the information available to build the models.

2.2 Valuation and forecasting

To build their recommendations, analysts seek to estimate the development of future earnings. With their calculations, they conclude how the stock should be valued compared to its current price – e.g. undervalued or overvalued. (Day, 1986; Arnold and Moizer 1984) Such exercises are a part of prospective analysis. Already in 1986 Day found out that analysts have differing styles regarding how they get to the end-product of the analysis (recommendation and target price in the form of a report) with the information they have gathered. In his study, analysts worked with annual reports presented to them. The evaluation phase varied from a very systematic approach of going through data (e.g. the annual report) to an unsystematic "piecemeal" approach. Day (1986) asserts that reworking the numbers was linked to less familiarity with the industry, which was more common for generalists. (Day, 1986) Regardless of analysts implementing their own approaches in valuation, Palepu et al. (2013) documented a high-level framework to describe the process of prospective analysis.

Prospective analysis is divided to forecasting and valuation, reflecting analysts' opinions of the covered firm's outlook. The first part of prospective analysis, forecasting, contains the analyst's company specific knowledge accumulated through analysis in the areas of strategy, accounting and financial information. A forecasting approach considered comprehensive – combatting too optimistic future projections – consists of cash flow and balance sheet forecasts in addition to earnings forecasts. This approach includes multiple separate forecasts; however, they are commonly driven by a few principal variables. Not all analysts apply the comprehensive forecasting approach, some rely solely on cash flow forecasts – estimating

incoming and outbound cash flows – in their prospective analysis. These may still require the utilization of accounting numbers: e.g. sales, costs and earnings. (Palepu et al. 2013, p. 239)

Performing the forecasting phase of prospective analysis requires understanding that is formed through strategy, accounting and financial analysis, which are prior steps to prospective analysis. The aforementioned steps provide guidance in evaluating a firm's performance notably on the short and medium term. Financial analysis aims at identifying the historical relationship of economic factors and firm performance. The economic factors, mainly encompassing the macroeconomic environment, industry and strategy, and accounting decisions are uncovered in the strategy and accounting analysis. Thus, forecasting strives to project the development of firm's performance and financial stability in relation to the changes in economic factors based on historical trends. (Palepu et al. 2013, p. 241) Figure 1 portrays a route of prospective analysis, dividing forecasting to three consecutive steps:

Step 1: Predict changes in environmental and firm-specific factors;

1. Macroeconomic analysis
2. Industry and business strategy analysis
3. Accounting analysis

Step 2: Assess the relationship between step 1 factors and financial performance

Step 3: Forecast condensed financial statements

(Palepu et al. 2013, p. 241-242)

Penman (2001, p.11) calls the described process of prospective analysis described by Palepu et al. (2013) as fundamental analysis of a firm.

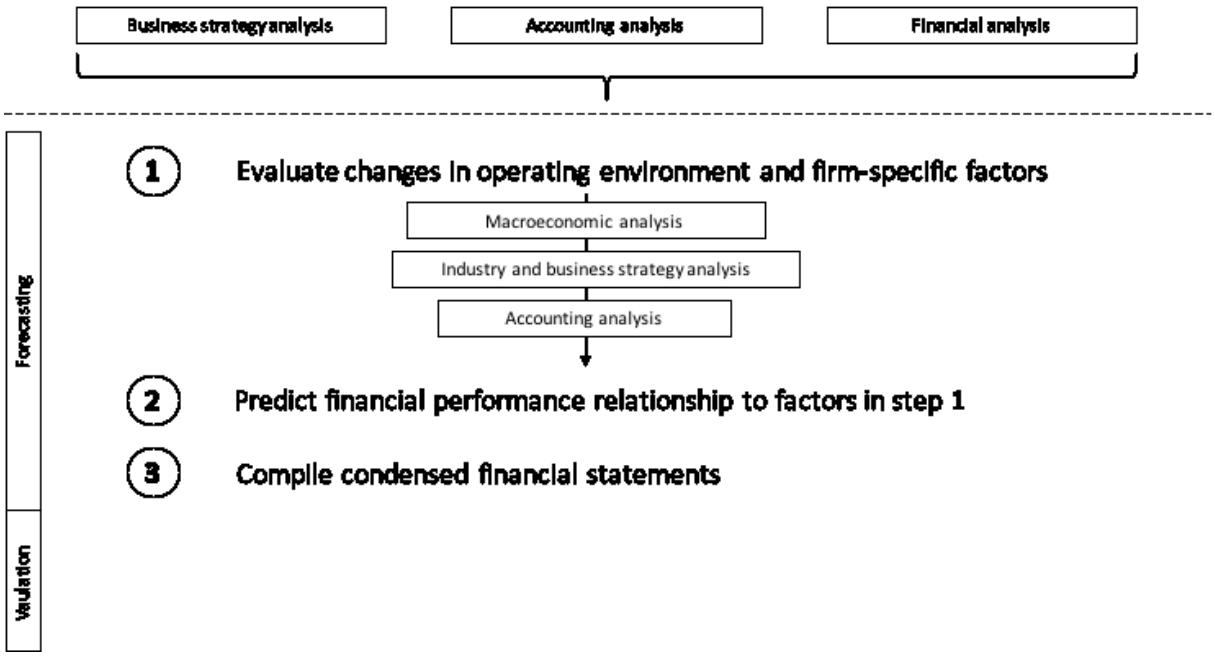

Figure 1 Prospective analysis. Adapted from Palepu et al. (2013).

Crafting condensed financial statements is less time consuming than forecasting all line items in a firm's financial statements. Further for analyst purposes, who have time constraints and less visibility to detailed items, condensed financial statements serve their role as sufficient for forecasting. The benefit of condensed financial statements is that they require a limited amount of assumptions to be made. (Palepu et al. 2013, p. 240) The elements required for building condensed financial statements are the following for the income statement: "sales, net operating profit after tax (NOPAT), net investment profit after tax (NIPAT), interest expense after tax, and net profit (Palepu et al. 2013, p. 240)." Further, the following elements are used to construct the balance sheet: "net operating working capital, net non-current operating assets, investment assets, debt and equity (Palepu et al. 2013, p. 240)."

The second part of prospective analysis, valuation, "*…is the process of converting a forecast into an estimate of the value of the firm's assets or equity* (Palepu et al. 2013, p. 278)." Valuation methods used to perform this conversion can be structured by either 1) valuing equity directly or 2) first valuing the operating and investment assets of the firm (*claims of equity and debt*) and then extracting the value of debt to end up with the equity value. For the purposes of valuing a company's assets or equity, various valuation methods can be used. In theory, regardless of the structuring approach, valuation methods should end up with the

same result, whereas practice has proved otherwise. (Palepu et al. 2013, p. 278) Thus, subsection 2.2.1 provides insight to different valuation methods at the disposal of analysts and their categorizations.

2.2.1 Valuation methods

Modern valuation techniques are based on cash flows and a discount rate to address risks. These form the present value for the forecasted cash flows. The forecasting time-horizon is typically two years. (Day, 1986; Arnold and Moizer 1984) Nevertheless, the valuation methods Day (1986) already identified in his early study were versatile: from formal and systematic approaches to very loose and informal methods.

However, later on in valuation research three major categories for methodologies have been identified (Asquith et al. 2005). Firstly, valuation can use multiples based on earnings or cash flows. Such multiples "include price-to-earnings (PE) ratios, relative price-to-earnings (Relative PE) ratios, earnings before interest, tax, depreciation, and amortization (EBITDA) multiples, and revenue multiples" (Asquith et al. 2005, p. 278). Secondly, discounted cash flow (DCF) models estimate future cash flows and a relevant risk adjusted discount rate. These calculations add FCF (free cash flows) to the firm and to equity, and EVA (economic value added). Thirdly, analysts use asset multiples based on e.g. market-to-book value. (Asquith et al., 2005) Similarly, these can also be simplified to be housed under two categories of cash flow (e.g. DCF, DY, DDM) and accrual-based (e.g. multiples) classifications. Another way to categorize valuation models is through sophistication. Sophisticated models – such as DCF, EVA, DDM and CFROI – aim to value the firm without direct comparison to peers, whereas unsophisticated models (relative valuation models) calculate company value against industry peers. Thus, sophisticated valuation methods rely on net present value calculation by including multiple time periods to be discounted – which fall under the DCF models category. (Imam et al., 2008) Table 1 and table 2 group examples of valuation methods according to sophistication and provide short definitions for calculation.

P/E	Price to earnings	Stock price p/ share divided by earnings per share
P/B	Price to book	Stock price p/ share divided by book value per share
P/S	Price to sales	Stock price p/ share divided by sales per share
P/CF	Price to cash flow	Stock price p/ share divided by cash flow per share
EV/EBITDA	Enterprise value to earnings before interest, tax, depreciation and amortization	Enterprise value is divided by EBITDA to show in how many years the firm would generate as much as its market capitalization (debtless)
EV/EBIT	Enterprise value to earnings before interest and tax	Similar to EV/EBITDA, but takes into account depreciation and amortization
DY	Dividend yield	Price is gained by dividing annual dividends per share by the price per share

Table 1 Unsophisticated valuation methods

DCF	Discounted cash flow model	Future free cash flows discounted to gain present value
DDM	Dividend discount model	Share price determined by the expected dividends and investor required rate of return in the future. (Barker, 1999)
EVA	Economic value added	Net Operating Profit After Taxes (NOPAT) - (Invested Capital * WACC)
RIV	Residual income valuation	Extracts equity costs*equity capital from net income
APV	Adjusted present value	Net present value if financed only by equity + debt financing benefits
CFROI	Cash flow return on investment	Cash flow divided by the market value of capital employed
NAV	Net Asset Valuation	Liabilities deducted from assets and divided by the number of shares outstanding

Table 2 Sophisticated valuation methods

Valuation models can also be divided in techniques valuing equity only (e.g. RI model) and including debt to the equation (DCF & EVA) – a variation of which the adjusted present value approach (APV) is accounting for tax advantage from interest bearing debt (Petersen & Plenborg, 2009). Table 3 shows examples to which categories valuation methods fall into according to classification basis (according to Imam et al., 2008). Categorizations according to sophistication and cash flow or accruals based are mostly in line with each other. Synthesizing, modern cash flow based methods tend to be more sophisticated. Relative valuation methods can be seen problematic from the perspective that a firm's valuation is always in relation to its peers, which is also the case for every other company in the peer group. Thus, it is not always a simple task to find eligible peers for a company under valuation and the choice of measure used in multiple valuation influences the result. (Penman, 2001) Whereas the most

obvious challenges of more sophisticated net present value based valuation methods are related to the uncertainty of future outlooks and thus forecasting accuracy (Imam et al. 2008).

	Cash flow based	Accruals based
Unsophisticated, Relative valuation		EV/EBIT
		EV/EBITDA
		P/E
		P/B
		P/S
	P/CF	
	DY	
Sophisticated		EVA
	DCF	
	DDM	
	RIV	
	NAV	
	APV	
	CFROI	

Table 3. Valuation method classifications

Asquith et al. (2005) also identified other rarer valuation methods, which typically are not familiar from valuation literature and are analyst specific. Regardless of the valuation method choice, in addition to valuing the firm as one entity, valuation can be done by summing up valuations of a firms' segments: the sum of the parts approach (figure 2). (Imam et al., 2008)

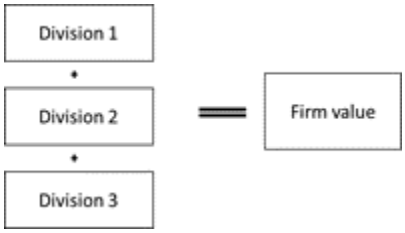

Figure 2 Sum of the parts approach

Further Asquith et al. (2005) did not find correlation between valuation methods and analyst accuracy. Hence, the accuracy of analyst valuations is a more complex issue and it indicates that as such accuracy is not sufficient in its own right to explain valuation method use in practice. For this reason, the subsequent subsection maps prior research of valuation methods found most prominent and how they are used.

2.2.2 Analyst use of valuation methods in practice

Analysts often choose one dominant valuation method for the model deriving the target price: the primary valuation method directly linked to the target price. Secondary methods refer to valuation methods either used as complementary or for non-valuation purposes. Researchers have argued in favor of particular valuation models/methods such as preferring the residual income valuation (RIV) over the DCF (discounted cash flow) model. Whereas others assert that RIV and DCF arrive to identical outcomes if properly applied and that the choice of method depends on the ease of access to information relevant to construct the model. Nevertheless, the research community is convinced of the superiority of sophisticated valuation methods. (Demirakos et al. 2004)

Nonetheless, research has witnessed the continuing use of less sophisticated valuation methods, e.g. multiples. (i.e. Demirakos et al. 2004; Imam et al. 2008; Brown et al., 2015) In Demirakos et al. (2004) study of international investment banks analyst reports the dominant model chosen was either a PE model or a multi-period DCF model. Further, some analysts have a comparative valuation model (such as PE) as their primary model even though they have built multi-period valuation models. (Demirakos et al. 2004) Demirakos et al. (2004) findings of PE importance in valuation is in line with Arnold and Moizer's (1984) and Day's (1986) early observations: estimated future earnings with a historical cost basis are put in the PE model to gain the output of the current market value (Arnold & Moizer, 1984).

However, Demirakos et al. (2004) findings of remarkable DCF model usage contrasts with prior research and suggests a change in analysts' valuation behavior. Whilst PE models continue strong, depending on circumstances other models are utilized as complementary; "*in some cases DCF models are used, and in others, more detailed analyses of price-to-sales multiples, growth options, or profitability analysis are used* (Demirakos, Strong, & Walker, 2004 p. 237)".

Moreover, Imam et al.'s (2008) research supports Demirakos et al.'s (2004) findings of increasingly popular DCF model utilization. However, they suggest that cash flow based models are more prevalent than accrual-based (e.g. PE) as primary models, but the methods are often combined to support decisions on stock recommendations and deriving a target

price for the stock. Thus, in addition to DCF, unsophisticated methods such as PE and EV/EBITDA are used both as primary and secondary methods, whereas other methods have only secondary relevance. DCF was rarely found to be used solely. Interestingly, when a multiple (accruals-based method) was used as the primary valuation method, DCF tends not to be considered. (Imam et al. 2008).

Imam et al. (2008) also note that PE may at times serve as a tool of communication, not as the primary method in its own. Hence, valuation methods support each other in the valuation process for analysts, rather than being perceived as separately utilized. Further they find that DCF is seen generally a very useful and flexible tool to revise valuation estimates that initially are based on multiples or subjective judgment; analysts use multiple valuation techniques together with qualitative input to forge their recommendations. They note this practice may result in more positive outcomes compared to accruals based techniques: opportunistic use of DCF to enhance trading. (Imam et al., 2008)

As Imam et al. (2008) asserted in their study of the combination of different valuation methods, they find that the use of valuation method combinations to be driven by the opportunity to gain views through both multi-period and short-term forecasts. DCF-models, albeit their technical shortcomings, provide the opportunity to build long-term forecasts on detailed cash flows. Whilst DCF offers multi-period focused forecasting, the longer timeframe increases uncertainty, which multiples with short-term of one-to-two years' earnings forecasts strive to balance when used as a combination. (Imam et al., 2008)

Further, Imam et al. (2008) identified three different approaches of combining valuation methods. When often analysts decide on one primary method to guide forming the target price, Imam et al. (2008) found that a majority derived the target price using multiple valuation methods. Thus, subjective perceptions influence analysts' suggestions for target price. Analysts are influenced continuously by inflowing information, thereafter the process involves discretion. Imam et al.'s (2008) study suggests that analysts run a secondary method also to derive the target price; in occasions of largely varying results analysts tend to rely on their gut feeling of the superior method to be underlined. To continue, an analyst can change the valuation method behind the target price used in case of strong argumentation favoring the

change. Analysts described also a second approach of using primarily a multiple for valuation followed by a reversal of the discounted cash flow calculations to derive at a growth rate applicable for the stock at the target price according to the multiple, 'reverse engineering'. Thus, DCF serves as a sanity check for many analysts with multiple-based primary methods, or as a tool to support argumentation for the target price. The essential point of both aforementioned valuation approaches is that the target price has its grounds primarily in a valuation method and is secondarily influenced by qualitative factors. (Imam et al., 2008)

The third variation of arriving at a target price relied less on valuation methods and more on an analyst's subjective views. The target price is arrived to by using the current stock price as a base point and assigning a premium or discount according to analyst's belief, followed by choosing a valuation method, which arrives approximately at the stock value set by the analyst prior to picking a valuation method. This approach was only seen as applicable in a mature industry. (Imam et al., 2008) However, the study did not address primarily the question of why analysts have chosen to follow the aforementioned approaches of valuation using method combinations.

Most recently, the study of Brown et al. (2015) continued to support the wide use of PE models and cash flow models. Price-earnings-growth models were also found to support analysts' buy or sell recommendations. Whereas dividend discount models, models based on earnings momentum or surprises, EVA models, residual income models and models based on stock prices and volume patterns are used rarely. (Brown et al., 2015) This was in line with Imam et al. (2008), who found that analysts did not perceive such sophisticated methods as economic value added and dividend discount model as important. Thus, the prevalence of multiples, e.g. PE, have been traced to uncertainties relating to long-term forecasts required by the DCF model (Barker, 1999). Imam et al. (2008) further found that overall, valuation methods perceived unimportant tend to be both accruals-based and unsophisticated, with the exception of earnings-based unsophisticated methods. Nevertheless, their study showed no dominance of either sophisticated or unsophisticated methods in valuation. As an additional finding, they noted that certain methods seem to be more prominent in valuing particular sectors: PB was found popular in the valuation process of industrial firms. (Imam et al., 2008)

Table 4 summarizes the findings of prior valuation method use research, showing continuous use of PE and the increasing popularity of the DCF models throughout years. It shows a shift from the dominance of only unsophisticated primary methods. The dominance of PE is showed to be challenged by EV/EBITDA.

Year	Author	Findings	Method
1984	Arnold & Moizer	P/E importance in valuations using a two-year time-horizon, DCF not widely used	Questionnaire and unstructured interviews
1986	Day	P/E importance in valuations using a two-year time-horizon	Protocol analysis in interviews (observing behavior, pioneered by Clarkson 1962)
1994	Previts et al.	P/E importance in valuations. Analysts base recommendations on assessing income statements in respect to balance sheets or cash flows. They evaluate non-financial information regarding strategy, threats and market position.	Content analysis of analyst reports
1999	Barker	Preference in unsophisticated valuation methods and short time-horizon due to uncertainty in future performance. The valuation process includes subjective decision-making assessing current management performance and management discussions.	Participant observation, questionnaires and semi-structured interviews
2004	Demirakos et al.	Prevalent use of PE and increasingly DCF as valuation methods. Some analysts that use DCF still found to use PE as primary method. Analysts note methods to depend on industry.	Analyst report content analysis
2008	Imam et al.	Wider use of DCF than PE. DCF limits acknowledged by analysts and PE considered useful for communication. DCF often not used in isolation but in combination with other methods, and is typically the primary method. PE and EV/EBITDA both used as primary and secondary methods. When multiples used as primary DCF rarely considered. They identified three valuation approaches including the use of reverse engineering or choosing a method according to a pre-set target price.	Semi-structured interviews with sell-side and buy-side analysts supplemented with content analysis of analyst reports.
2015	Brown et al.	PE and cash flow models commonly used, other sophisticated methods rarely used by analysts.	Survey and follow-up interviews

Table 4 Prior findings on use of valuation methods

2.2.3 Information sources and information use in valuation

Analysts' access to information has been discussed as one factor influencing not only forecast accuracy, but also valuation method choice (Demirakos et al., 2004). Researchers have explored the analyst's 'black box' from the perspective of what information analysts use in valuations throughout years (i.e Cascino et al. 2016; Brown et al., 2015; Ramnath et al., 2008; Flöstrand and Ström, 2006; Fogarty & Rogers, 2005; Previts et al., 1994; Schipper, 1991; Day 1986; Arnold and Moizer, 1984). This section explores prior research on information use of analysts in the valuation process. A clear development has been the increased use of non-financial information due to globalization and changing business environments (Beretta & Bozzolan, 2004; Graham et al., 2002).

Gonedes (1976) describes information as something that has not previously existed – it is new – and information users should be able to gather it from the markets. On more detail, Du Rietz (2014) explains information to be "*the content of, for example, numbers* (p. 396)" and primarily accounts, which are considered information when they are useful. Further, not only being new, information needs to be interpreted (Beunza and Garud, 2007). Du Rietz (2014) emphasizes on the changing perceptions of what accounts are considered as information through time and between analysts, and finds that the accounts that become perceived as information to be tied to practices. (Du Rietz, 2014) Information used in valuations is here divided to financial and nonfinancial information. Non-financial information covers a large variety of topics such as company and management related information, industry and competitor information, product market information, corporate governance and the macro-economic environment (Cascino et al., 2016; Ramnath et al., 2008).

Information usefulness has been earlier studied through value relevance that "i*s the statistical relation between information (such as earnings) and share price* (Flöstrand and Ström, 2006, p. 580)" *(e.g. Graham et al., 2002).* However, not all information that analysts consider useful in the valuation process has a direct impact on the share price. Value relevance fails to capture the usefulness of information to an analyst from the behavioral perspective. Flöstrand and Ström (2006) proposed to use valuation relevance as an alternative approach; information usefulness is not determined by its possible impact on the market price of a share, but by the

analyst's choice to make use of it in the valuation process. Making use of information in the valuation process involves information gathering. Hellman (2005) distinguishes two alternative ways of information gathering involved in a valuation process: 1) active gathering and 2) daily inflow of information. Information gathered through the daily inflow, routinely collecting, is often public. Whereas active gathering is required to acquire non-public information. Active gathering thus may require a trigger (Hellman, 2005).

Well-performing analysts use a wide variety of information sources and factors in their valuations and forecasts: including industry statistics, preliminary figures, previous accounts, company contact, share price data, newspapers and interim statements. Relationships built with different stakeholders of the company under scrutiny, such as suppliers, are essential. The relationships with stakeholders with knowledge not available publicly enables improvingly accurate forecasts and reports – i.e. decreasing the uncertainty of future outcomes. Especially the relationship with the company management is seen crucial. (Cascino et al., 2016; Fogarty & Rogers, 2005; Day, 1986)

Communication with management includes conference calls and one-to-one communications. (Ramnath et al., 2008) Recently Brown et al. (2015) found that one-to-one discussions with company management are of greater importance in constructing earnings forecasts and formulating stock recommendations than primary research and recent earnings performance, supporting the hypothesis of Fogarty and Rogers (2005) that accounting information "*can only have a secondary role* (Fogarty & Rogers, 2005 p. 350)". Some issues are not brought up during public conference calls by analysts, but rather asked privately: e.g. potential misrepresentation of financial information by management. (Brown et al., 2015) However, analysts believe history to provide a basis for valuations. (Cascino et al., 2016; Fogarty & Rogers, 2005; Day, 1986) Following Day's (1986) early identification, forecasts were mainly revised when e.g. annual reports were published; annual report information was not seen as price sensitive.

Within financial information, income statement and performance related topics prevail as relevant. (Arnold & Moizer, 1984; Day, 1986; Previts et al., 1994; Fogarty & Rogers, 2005). Thus, analysts stress earnings over cash flows (Schipper, 1991), except when valuing smaller

companies, whose dividends are expected to decrease or with high leverage (Previts et al., 1994). Analysts consider often 1) the chairman's statement, 2) the cash flow statement and 3) segment information. Dividend history has been perceived as a guide to dividend policy, growth trends to future growth and capex seen as indicator of future prosperity. (Arnold and Moizer 1984; i.e. Brown et al., 2015; Fogarty & Rogers, 2005; Previts et al., 1994) Further, future-oriented discussions on how earnings are constructed are examined as well as components forming the current result, such as demand, volume and pricing. (Previts et al., 1994). Thus, analysts hold non-financial information in an important role in forecasting the future and anticipating changes: plans and strategy, risks, competitive position and management. (Day, 1986; Previts et al., 1994). In 1986 Day found specialists to focus more on strategic issues than generalists and Orens & Lybaert (2007) asserted that analysts with most accurate forecasts tend to rely on future oriented information (Orens & Lybaert, 2007). Hence, analysts focusing on strategic issues may have more accurate forecasts.

However, Orens & Lybaert (2010) find analyst's use of non-financial information to be related to the riskiness and volatility of the company; companies with higher leverage and greater stock return volatility drive for the use of more non-financial information to be able to account for risks. Analysts use non-financial information to explain financials when they are not found informative enough. Interestingly, analysts with less experience or following a larger number of firms utilized more non-financial data in their study. (Orens & Lybaert, 2010)

Additionally, Brown et al.'s (2015) findings support prior research in the value of industry knowledge in forecasting earnings (see e.g. Day, 1986). Industry knowledge is here defined to include understanding of industry's key trends and technologies, its supply chains, distribution models, margins, customers, labor and management teams. (Brown et al., 2015).

On a more detailed level Brown et al. (2015) described analysts typically to exclude non-recurring items in forecasting "street earnings". Whereas amortization, changes in working capital and depreciation are included in models. (Brown et al., 2015)

Table 5 summarizes findings from prior research chronologically on information sources and information use, excluding environmental, social and governance information – which is

considered subsequently. The findings state financial information as primary inputs to models, but to have a secondary role in valuation, and underline management discussions.

Year	Author	Findings
1984	Arnold and Moizer	Different valuation processes, demand for greater firm disclosures. Valuable information sources: annual and interim reports, and discussions with firm management. The income statement and balance sheet most valuable from annual and interim reports, followed by cash flow statements. Other sources include e.g. the press and cost data.
1986	Day	Analysts use both formal and informal valuation processes. Forecasts revised after annual report release. Analyst interest in the annual report on: management's views, cash flows, segment information, dividend history, growth trends and capex. Income statement information preferred to balance sheet items. Multiple information sources.
1991	Schipper	Discusses prior research on analysts' decision-processes and forecasts. Analysts consider a larger set of information compared to what is visible from their reports, earnings stressed over cash flows and segment data is of interest.
1994	Previts et al.	Analysts base recommendations on assessing income statements in respect to balance sheets or cash flows. They evaluate non-financial information regarding strategy, threats and market position. Analysts separate continuous and temporary earnings in the valuation process.
2005	Fogarty & Rogers	Accounting information has a secondary role in valuations. Information utilized from stakeholders and company management. Management controlled information essential for analysts' valuations. Past information important to forecast the future.
2006	Flöstrand and Ström	Study non-financial information usefulness to analysts through valuation relevance, compared to some earlier studies focusing on value relevance.
2007	Orens & Lybaert	Forecast accuracy linked to use of forward-looking information. Use of non-financial information related to riskiness and volatility of valuation target. Experience linked with less non-financial information.
2008	Ramnath et al.	Ties together prior research. E.g., analysts' exploitation of various information sources, e.g. conference calls, one-to-one communication with management.
2015	Brown et al.	One-to-one discussions with management more important than primary research and recent earnings performance in formulating recommendations and forecasts. Industry knowledge essential.
2016	Cascino et al.	Financial information primary input to decision-making regardless of short-comings i.e. management discretion.

Table 5 Prior findings on information sources and usage

2.2.4 ESG information in valuations

Environmental social and governance (ESG) information can be financial or non-financial. Analogous to its name, it consists of information considered a part of corporate social responsibility (CSR). Earlier such information was also called socially responsible investments (SRI) information. (Tan, 2014). The disclosure of ESG-related information has grown together with other voluntary disclosure due to investor demands (Orens & Lybaert, 2007; Jemel et al., 2011; Luo et al., 2015). Such disclosures can be presented through various sources including the annual report, sustainability reports, interim reports and newspapers to name a few (Shetata, 2014). Thus, major investment banks have established separate analyst teams investigating ESG issues (Tan, 2014).

Cerin (2010) developed a framework (table 6) to environmental social and governance factors, as there has been no clear consensus of what ESG information consists of. The framework divides environmental information to 6 categories: 1) environmental preparedness, 2) pollution abatement and energy saving, 3) laws and regulations, site specific, 4) laws and regulations, product/market specific, 5) product performance and 6) environmental impact categories and targets. Categories two and three together form the category of company specific environmental performance. The social aspects are divided to employment practices, human rights and community involvement. The framework is thus completed with a corporate governance category. The framework's environmental side inspects business risks, opportunities or both. (Cerin, 2010)

There has been some debate both for and against its incorporation to financial models with arguments on its effect to economic performance – and decision-usefulness. (Nielsen & Noergaard, 2011; Campbell & Slack, 2011; Jemel et al., 2011) Hence, existing research and debate assess the value relevance of ESG factors and firm financial performance. (Cerin, 2010) However, some attempts on incorporating environmental social and governance information to financial models have been made. Yet, there is a lack of knowledge in how analysts use such information (Nielsen & Noergaard, 2011).

Environmental	
Environmental preparedness	
Pollution abatement and energy saving	Company specific environmental performance
Laws and regulations, site specific	
Laws and regulations, product/market specific	Product/market specific environ. performance
Product performance	
Environmental impact categories and targets	
Social	
Employment practices	
Human rights	
Community involvement	
Corporate governance	

Table 6 ESG framework (Cerin, 2010)

The market actors that benefit from sell-side analyst reports in investing in stocks can be divided to investors using solely financial information and to those adding ESG information to their assessments. Of the investors considering ESG information, the larger group considers it on a high level and a smaller group incorporates the information to investment analysis systematically (called SRI investors). The main reason for investors still lacking proper ESG consideration was seen to be due to ROI focus, hence ESG incorporation was seen too complex. Some studies have indicated financial professionals' use of a dual-decision method in valuation considering first financial aspects and thus followed by an ESG consideration. (Nielsen & Noergaard, 2011) Even though Imam et al. (2008) note clients – the investors – to have an influence in analyst valuation practices, there is little evidence of the influence of the rising ESG interest on the buy-side to sell-side analyst work**.**

Nielsen & Noergaard (2011) found in their study a variation in analyst behavior. One analyst only regarded financial information to valuations – a single decision model – partially due to

resource constraints. ESG analysis according to the analyst is a time-consuming exercise and needs to be made separately for each firm under analysis. Thus, according to client needs, the analysts' goal is to assess ROI. Financial information was argued to be comparable, transparent and certain, as the realization of ESG related issues in e.g. decades involves uncertainty. Hence, finding such parameters for ESG related issues that would reliably estimate effects serves as a challenge in ESG incorporation. However, some analysts involved ESG factors through screening or check mark lists as complementary to financial evaluation. This was referred to as a dual decision-process, with evaluating both financial and ESG information sequently. Also Luo et al. (2015) identified screening practices – analyze firms for reputational risks or sustainable investing. For some analysts, ESG information was considered as essential in forming their stock recommendations (Luo et al., 2015). In Cerin's (2010) study, ESG issues discussed consisted of company specific environmental performance or product/market specific environmental performance. Further, there were variations of the use of environmental information between industries. Analysts following the sectors of e.g. water utility, chemicals or oil and gas considered ESG-information most often. (Cerin, 2010)

On the contrary, Campbell & Slack (2011) found in their interviews analysts to disregard the decision-usefulness of environmental information from annual reports in valuations of UK banks. Contrasting to earlier argumentation, analysts did not find environmental information of banks material. (Campbell & Slack, 2011)

For sell-side analysts the main driver for the lack of ESG incorporation to valuations is client-based. (Nielsen & Noergaard, 2011; Campbell & Slack, 2011) Analysts in the study of Campbell & Slack (2011) had not witnessed growing interest from the client side, thus they found ESG information most relevant for SRI funds. Whereas in Nielsen & Noergaard's (2011) study ESG importance was seen to grow (Nielsen & Noergaard, 2011). Also Cerin (2010) found limitations in ESG consideration in valuations. Aspects considered related, from the environmental perspective, to litigation prospects and substance flows. Thus, the focus was on business opportunities and risks. (Cerin, 2010) Jemel et al. (2011) pointed out another perspective for the limitations of ESG-information use in valuation models. They suggest modern valuation consensus to underline the net present value of a firm – financial performance – where often intangible aspects are neglected. Thus they find the neglectment of intangible aspects a great

barrier to ESG factor integration to valution models. (Jemel et al., 2011). Campbell and Slack (2011) noted that analysts' incentives do not support long-term forecasts – in which environmental risks could materialize – and that their skill-sets were technical, and thus, their focus short-term geared. Additionally, the lack of commonly accepted methodology to quantify ESG-information, and thus inexistent comparability were seen as barriers. (Campbell & Slack, 2011; Nielsen & Noergaard, 2011)

Whereas the study of Luo et al. (2015) finds analysts to take ESG information into consideration from a performance perspective (corporate social performance). They find analysts to serve as a mediator for investors regarding the link of financial and social performance, decreasing information asymmetry: it is difficult for investors to have in-depth knowledge of a company's ESG quality. Further resource constraints limit investor ability to factor ESG information to the stock price. ESG information that effects a firm's corporate social performance can influence an analyst's stock recommendation. Such aspects seen to support long-term growth were for example wastewater treatment or other sustainable innovations and practices. They suggest that firms' stakeholder management should note ESG-influence on analysts. (Luo et al., 2015)

Moreover, ESG-analysts in investment banks or brokerage firms have worked on the incorporation of ESG information to valuations by studying and exposing the link between corporate social performance and financial performance. Some analysts use the services of external providers for ESG quantification. (Tan, 2014)

Albeit brokerage firms have established ESG-teams due to stakeholder demands (Jemel et al., 2011) and such teams have investigated the link of ESG and financial performance (Tan, 2014), there remains lack of consensus in ESG valuation relevance. Campbell & Slack (2011) found analysts' covering banks to mainly disregard ESG information, whereas other studies have showed increased analyst interest to such non-financial information (see Luo et al., 2015; Nielsen & Noergaard, 2011). Even though analysts covering such industries as oil & gas to consider ESG-information more often, a gap concerning deeper insights remains.

2.2.5 How analysts choose valuation methods

Even though researchers have studied the use of different valuation methods and the way they are used, there has been little research on how analysts make choices regarding valuation. Why do analysts choose certain valuation methods to value a particular company? Researchers investigating the use of valuation methods have been able to identify some factors influencing analyst choices (e.g. Demirakos et al. 2004; Imam et al. 2008).

Analysts highlighted the importance of viewing valuation methods from the perspective of client communication. Secondary methods can be introduced due to applicability in client communication even though the target price of a stock is calculated through the primary method. Thus, a secondary valuation method may not serve the purpose of valuation per se. Henceforth in their study, Imam et al. (2008) found the importance of PE – and its importance in earlier studies – to be less that of actual valuation and more of a medium of communication. Further underlining the role of analysts' clients in the choice of valuation methods, Imam et al. (2008) assert that client preferences of valuation methods and expectations of methods used in equity valuation steer analysts towards methods articulated by clients. They thus suggest that an analyst's valuation method choice may represent less of their own vision or opinion: e.g. a cash flow-based method can be decided upon acknowledging client focus on cash flow models. Additionally, Imam et al. (2008) suggested analysts' seek to be perceived more credible through method choices. Thus, the weight of subjective judgment – influenced by industry knowledge – in valuations is rationed by the need to be seen professional. (Imam et al., 2008)

Another driver for valuation method choice that Imam et al. (2008) identified comes from trends. If a method is perceived to be increasingly used and accepted by a larger public, a consensus, the analyst more likely also uses it. It is questionable whether the method actually improves forecast accuracy and enhance stock recommendations. Thus, Imam et al. (2008) note that not only may client interest and consensus around a valuation method weigh in the method choice process, but also does the context where the firm evaluated operates. Firms go through market cycles and analyst method choice can be influenced by which part of the cycle the company and industry are respectively at. This implies that when the firm is on the

top of the market cycle, analysts tend to rely on valuation methods focusing on long-term forecasts and outlooks (e.g. PEG, Price/earnings to growth), whereas during the bottom of the cycle dividend yield and the ability to monetize the business raises its importance as investors become more cautious. (Imam et al., 2008) Not only the market cycle, but also the industry of the firm under evaluation has been studied to affect method choice. The rationale behind differences in valuation method use across industries remains unclear, but a possible explanation rises from differing growth characteristics. To continue, comparative valuation methods seem to be more popular in stable industries. (Flöstrand, 2006, Demirakos et al. 2004) Moreover, analyst valuation methods have been argued to be influenced by the availability of information needed to construct a valuation model (Demirakos et al. 2004).

Research has noticed that analysts' DCF utilization can be associated with more optimistic recommendations than accruals based methods and thus, opportunistic behavior to accelerate trading to bring increasingly commissions to investment banks or brokerage firms engaging in both activities. Still analysts themselves have raised doubts of DCF relevance as a primary valuation method not only due to technical limitations, but also during long time periods where share prices have moved away from the levels proposed by fundamentals. Anyhow, incentives can affect analysts' behavior in valuation method choice, even though there has been hardly any concrete evidence of taking advantage of valuation methods for more opportunistic valuations. (Imam et al. 2008; Schipper, 1991)

Prior research has also hypothesized that the uncertainty of future outcomes would be a factor influencing analyst's choices, due to the rising risk of inaccuracy with a longer time-horizon – as asserted by Barker (1999). This is grouped under technical limitations. Further analysts' familiarity with a method has been suggested as a factor (Demirakos et al. 2004). The closely linked cost-benefit ratio and relative prices have been used as arguments to explain analyst behavior. (Flöstrand, 2006) The cost-benefit argument recognizes a difference of time and effort needed to build valuation models for relative and present value based techniques. Especially regarding the use of theoretically inferior multiples, a hypothesis lies that their result is sufficient compared to the consumption of resources needed to perform the valuation. (Bhojraj and Lee, 2002) The relative prices argument on the other hand springs from the idea that analysts can choose a valuation method according to their preference of

high or low valuations; first deciding on a target price followed by choosing a method to support the predetermined price. (Flöstrand, 2006) This argument relates to the possible opportunistic behavior of analysts. Flöstrand's (2006) study of analyzing 260 sell-side analyst reports with regression analysis did not support these hypotheses. However, as Flöstrand (2006) researched behavioral outcomes, he underlined the need for in-depth study on market actor behavior. He also suggested examining the relationship of analyst experience and valuation behavior (Flöstrand, 2006).

Theoretical	**Empirical**
Incentive influence on method choices	Client preferences
Information availability	Trends and market consensus
Relative prices argument	Market cycle
Cost-benefit-ratio	Industry
Familiarity with a method (habit)	Technical limitations of methods / Uncertainty of outcomes

Table 7 Categorization of factors according to evidence from prior research

Table 7 groups factors influencing valuation method choices according to prior research, dividing them to empirically proven and theorized elements. To better understand the context of analysts' decision-making and the holistic picture of their operating environment, Figure 3 maps learnings from research. Figure 3 is adapted from Ramnath et al. (2008), who outlined a framework derived from the analysis findings of prior research of analysts' reporting environment.

Figure 3 portrays the analysts' playing field explored in this chapter. The first layer represents underlying factors influencing analysts choices of methods, information and practices. The regulatory framework, which has not been given focus in this work, analyst incentives and customer and organization preferences already guide the analyst. The second layer depicts information sources analysts use to build their valuations: the prospective analysis. How the information is worked depends on the analysts expertize and is affected by decision processes that dictate which methods are put to work, how and which accounts are considered

information. The outcome is the analysts' reports which typically have the following elements: stock recommendation, target price, earnings forecasts and the descriptions of prospects. The decision processes are one of the least understood parts of analysts valuations.

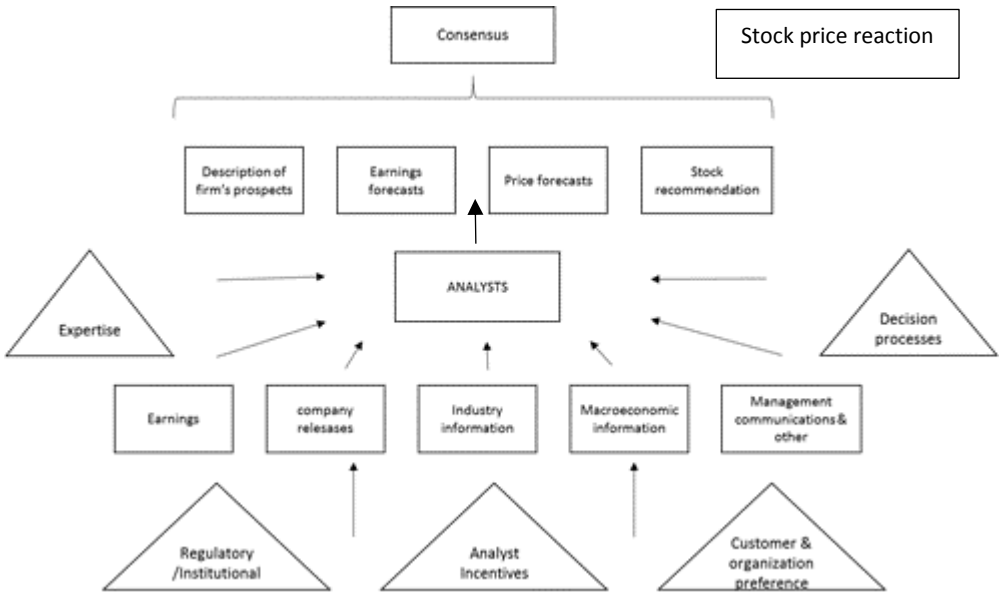

Figure 3 Analysts' operating environment. Adapted from Ramnath et al. (2008)

2.3 Summary

This subsection ties together what has been learned through prior research on analysts' valuation method choices and recapitulate what has been learned so far of valuations, methods used in practice and supported by theory, information used in them and acknowledging these, why do analysts choose to rely on particular valuation methods. Thus, the research gap will be further discussed.

Analysts serve as intermediaries creating new information for investors and reducing information asymmetry in the equity markets (Healy & Palepu, 2001; Asquith et al., 2005) Their reports on covered firms have a direct share price impact (Ramnath et al., 2008). Hence, increased analyst coverage decreases a company's cost of capital (Lang & Lundholm, 1996).

There are many ways according to which analysts can tackle the task of stock valuation (Day, 1986). Palepu et al. (2013) presented a framework of possible steps of prospective analysis – forecasting and valuation. Analysts are required to make assumptions and gather both financial and non-financial information to base their calculations on (Palepu et al., 2013). Further theory and practice have introduced multiple valuation methods for analysts to choose from and documented the prevalence of few dominant methods. Both sophisticated and unsophisticated methods are used, of which DCF has been often used as a primary method – or for reverse engineering when the valuation is primarily multiple based. (e.g. Asquith et al. 2015; Brown et al. 2015; Imam et al. 2008; Demirakos et al. 2004; Day 1986) Often analysts choose a primary method for target price calculation (Demirakos et al. 2004), but still may use combinations of methods to gain the final target price or use secondary valuation methods for non-valuation purposes (Imam et al. 2008). Thus, the target price and stock recommendation can further be influenced by qualitative information after coming up with a preliminary price through one's valuation model (Imam et al. 2008). For this study, if an analyst has selected a primary method, the method will be considered fixed.

To understand analysts' valuation method choices, one must understand the valuation process, portrayed by the framework of prospective analysis. The valuation model and analysis inputs consist of information gathered from different information sources, encompassing both financial and non-financial information. Information sources include financial statements, and other company disclosures, industry and macroeconomic information, for example. Within the financial information, researchers have found analysts to underline certain information as inputs, such as income statement information compared to balance sheet items. Managerial conversations have been suggested to be of utmost importance in gaining additional insight. (Fogarty and Rogers, 2005; Ramnath et al., 2008; Brown et al., 2015) Further, forward-looking information is valued by analysts. Industry knowledge is essential. Less experienced analysts tended to use more non-financial information. (Orens & Lybaert, 2010)

The demand for ESG information has increased and there have been a few studies on analysts' ESG use with contradicting results. However, they have all supported the finding of ESG information rarely being incorporated to valuation models. (Campbell & Slack, 2011; Luo et

al., 2015) Evidence suggests ESG information is increasingly used but as a part of a dual-decision model, when used. Thus, ESG information rarely affects target prices. (Nielsen and Noergaard, 2011) The rational for analyst choices not to incorporate ESG factors include difficulties in quantification, related uncertainty and lack of push from investors. Albeit, ESG-analysts have worked with the link between ESG and financial performance (Tan, 2014).

Prior research scrutinizing drivers for analysts' valuation method choices and approaches are few. However, through interviews researchers have found indications of factors influencing analyst's choices. Customer preferences, analyst familiarity with a particular method, market trends and the consensus, market cycles and the industry of the firm under valuation, as well as acknowledgement of certain valuation method limitations influence analysts' choices – not forgetting the ease of access to information required by a particular method (Imam et al. 2008; Demirakos et al. 2004). Researchers have also noticed a correlation with analyst specialization and valuation related choices and practices: less experienced or generalist analysts may rework company figures to increase their knowledge, whereas industry specialists have less of a tendency to do so (Day, 1986). Further, not all factors suggested to influence analyst's method preferences have empirical evidence (Flöstrand, 2006).

Imam et al. 2008 asserted research to know little of analysts' decision-making in terms of valuation method choice drivers. Thus, the aim of this study is to investigate analysts' valuation method choices and contribute to the understanding of the hows and whys of market actors' behavior in the equity market. Especially the focus is on choices behind primary valuation methods directly linked to target prices. Prior research has studied analysts' work on a broader level encompassing multiple sectors, or within certain sectors. However, method choice practices have not been studied by assessing analysts' differing valuation practices on a single firm. Henceforth, secondarily within the context of renewable energy valuations, the relation of ESG information in valuations is investigated.

Moreover, to investigate these the research focuses on investigating the lower part figure 3 adapted from Ramnath et al. (2008); factors influencing analysts. Yet in the construction of the research protocol, the regulatory and incentives were left out of the focus.

3. Methodology and research material

This chapter introduces the methodology used in this study and justifications for the approach chosen. Further this chapter discusses the exercises of sample choice, data collection and analysis. Lastly the trustworthiness of this study is considered. The purpose of this section is to provide understanding of how the research was conducted.

3.1 Research methods

This study aims at enlarging the knowledge on analysts' decision-processes. In particular, the primary focus is on contributing to research on analysts' valuation method choices. This research adopted a qualitative approach: a case study, gathering empirical data using the method of semi-structured interviews. The choice of a qualitative approach derives from the rationalization that it is the only possible way to get behind the forecasts or valuations and see what are the underlying factors affecting decision-making. Further, as the objective is to understand behavior, Hirsjärvi and Hurme (2011) note the qualitative method to be suitable. This is logical as the end-product rarely shows all the variables behind the scene that form it, here valuation and forecast. Further, only by discussions I argue that one can gain knowledge of the variables that the analyst decides to leave out of scrutiny and the rationalization or viewpoint of why. Further reasoning for a qualitative approach comes from Weick & Roberts (1993) who argue that decision-making ultimately has subjective views involved.

This exercise was chosen to be a case study to gain more specific knowledge of how analysts value firms within a sector and why particular choices are made. This was chosen to be studied through Neste Oyj. The approach was chosen to gain enough coverage for one sector and thus improve the validity of the study. Hence, the approach of a case study method was supported by Scapens (1990), who noted that management accounting studies often benefit from the case-study-method. Case studies seek to answer questions why and how of a phenomenon (Yin, 1984 p.23) and a single case study enables deeper investigation of the target (Vaivio, 2008). This enables exploring the drivers influencing valuation method choices and ESG relevance in the renewable energy sector. As analysts follow various companies, they may

have different valuation approaches and processes: models, information sources for different companies and may also considerer different types of information relevant. Thus, a case study cannot be statistically generalized, but it gives the possibility to gain in-depth knowledge of a phenomenon. Hence, Lukka & Kasanen (1995) argue for the opportunity of contextual generalization, which relies on the acknowledgement of the institutional and historical environment the phenomenon. Thus, the study can provide evidence of the analysts' decision-environment and indications to the research community on should ESG-related issues be further studied.

The chosen method of semi-structured interviews enables structuring the interviews and gearing them towards relevant topics yet leaving room for individual interviewees to elaborate on topics in which they have the most to say (Hirsjärvi & Hurme, 2009), and possibly even bring up components that are not included in the interview protocol. This enables greater interviewee impact to the result (Hirsjärvi & Hurme, 2009); thus, the interviewer can steer the conversation without too much controlling (Koskinen et al. 2005). Prior studies, e.g. Campbell & Slack (2011) and Day (1986), have utilized annual reports to study sell-side analysts practices in interviews. However, as analysts' have indicated that the annual report is only one source in valuations (Day, 1986) and researchers have suggested financial information to play a secondary role in valuations (Fogarty & Rogers, 2005), the approach of using the analysts' reports as a facilitation tool was found the most plausible.

The research approach was abductive, which could be described continuous discussion between theory and empirical evidence, the data (Ahrens & Chapman, 2006). This differs from other approaches; the inductive approach arrives at theory and the deductive approach stems from it. (Bryman & Bell, 2003, p.9-12) The construction of the interview protocol required the acknowledgement of prior research and theory to enable building on top of what is already known of the phenomenon.

3.2 Data collection and analysis

The data consisted of interviews with analysts covering Neste Oyj and their latest valuation reports. Neste Oyj has 18 covering analysts recognized in the investor section of their website.

The lead analysts' names, contact information, brokerage firm names and e-mail addresses are available at Neste Oyj's investor relations site. The brokerage firms include both international institutions and Nordic ones. Analysts were contacted by a standardized email. The purpose of this study was explained with presenting the focus points of this study briefly and the objective of gaining understanding on energy sector sell-side analysts' valuations. Of the 18 contacted analysts, analysts from 6 different brokerage firms agreed upon an interview, one declined, whereas the rest were not reached. Thus, the response rate for this study was 33%. The interviewees were all lead analysts covering Neste Oyj. The time range of covering Neste Oyj varied considerably from less than one year to several years. Most of the lead analysts had a long background as analysts in brokerage firms. The lead analysts included both generalists and oil and gas sector specialists. Interviewees were provided with an indicative interview protocol in advance presenting the main themes that were to be discussed.

The interview protocol was constructed after combining three measures. Firstly, knowledge was obtained through prior research on the subject and covered the following themes: 1) interviewee background, 2) information used in valuations, 3) ESG-information more specifically, 4) current valuation method use 5) why methods have been chosen as primary 6) other valuation related aspects. Secondly, the themes were discussed with Neste Oyj's representatives in contact with analysts. Thirdly, and most importantly, content analysis was applied on interviewees' latest reports on Neste Oyj, bringing depth to the protocol and interviews. To follow, semi-structured interviews were facilitated using the interviewee's (analyst's) latest analyst report on Neste Oyj – enabling thorough discussion around valuation choices. The Interview protocol can be found as appendix. The interview protocol supported in securing a consistent approach across all interviews and to ensure response comparability.

Interviews were conducted both face-to-face and by phone according to interviewees' convenience. All interviews were recorded according to interviewees' permission and transcribed. The interviews were conducted and analyzed anonymously to encourage analysts to discuss topics as openly as possible. The interviews were conducted during January 2017. The interviews lasted approximately 1h per interview. The shortest interview lasted for 35 minutes. The interviewee (Analyst A) had provided written answers to the themed protocol in advance. Thus, this conversation leaned on pre-submitted answers and the conversation was

developed from there. The longest interview lasted for 1,5 hours. From one brokerage firm, two analysts were interviewed simultaneously, as the other one had covered Neste Oyj for a shorter period of time, and the other had a longer experience covering Neste Oyj as the lead analyst. The analysts complemented each other's answers. Thus, the interviewees are referred to as C1 and C2. Overall, the brokerage firms are referred to with alphabets from A to F, implying that analysts are referred to according to their brokerage firm. Table 8 lists the interviews and presents basic data of interviewees.

Brokerage Firm	Analyst	Location	Years covering Neste Oyj	Team	Specialization	Interview duration	Interview type
A	A	UK	3<x>6	Team	Specialist	40 min	Phone
B	B	Nordics	x>6	Sole	Generalist	60 min	Phone
C	C1 & C2	Nordics	3<x>6; x<3	Team	Generalist; Generalist	47 min	Face-to-face
D	D	Nordics	x>6	Sole	Generalist	1h 10 min	Face-to-face
E	E	Nordics	x<3	Sole	Generalist	1h 10 min	Face-to-face
F	F	UK	3<x>6	Sole	Specialist	35 min	Phone

Table 8 Interviewee basic data

Further, after the interviews the analysts were asked to answer short follow-up questions to complement the interview by e-mail. Some analysts provided supporting material such as ESG-reports or valuation reports after the interview. The analysis of the research material focuses on the transcribed interviews, but considers complementary material.

The interviews were held in English and Finnish. Thus, transcriptions were written in the interview language. The data was translated to English in the analysis phase from Finnish transcripts. The transcripts were crafted word by word excluding filler words or other sounds, which did not contribute to the message conveyed by the interviewee. Thus, the researcher carries the responsibility of interpretations of the messages. The content of the transcripts was analyzed qualitatively. The data was divided according to themes and subthemes of which relevant were chosen to this thesis for further analysis. In the first phase information was divided to six main themes/categories and subsequently to subthemes. Categorization enables a systematic and consistent approach to analyzing data (Saunders et al., 2007 p.479). Analysis was based on both inductive and deductive approaches, as category construction was

influenced not only by empirical evidence, but also the theoretical background. Hence, obtained knowledge and evidence gained by qualitative content analysis is used to reconstruct a perception of the phenomenon (Hirsjärvi & Hurme 2011, p. 143).

3.3 Quality of the study

Eriksson & Kovalainen (2008) considers the quality of research through the categories of validity, reliability and generalizability. The validity and reliability of the study can be enhanced by benefiting from multiple sources of evidence – triangulation – in a case study (Yin, 2003, p. 97). Validity and reliability were tried to ensure in this study by several procedures. Firstly, the interviewees were all approached in an identical manner. Secondly, they were provided with a standardized theme-based protocol to bring analysts aware of discussion topics. Thirdly, the same interview protocol was applied in all interviews. However, as the method chosen was semi-structured interviews, the discussions were less rigid and enabled elaboration. All interviews were recorded and transcribed (80 transcribed pages). In this study triangulation is exercised through the utilization of supporting material – analysts' reports and other obtained related material, mainly ESG-reports. All research material has been documented, to form a database enhancing the reliability of this research (Yin, 2003 p.102).

Thus, databases map the sources of research evidence. A key principle in assuring the reliability and validity is to maintain visible the manner by which evidence has been obtained from different sources. Further, the reader should be able to trace the development of the research step by step from conclusions to research questions. Links to citation sources should be clear. (Yin 2003, p.102) This study has been undertaken with every effort to follow these principles.

Statistical generalization is not seen as a key objective case-studies. On the contrary, it seeks deeper analysis of a phenomena and to enlighten research through the observation of one case. (Vaivio, 2008) The case study approach strives for contextual generalization. No other study has approached valuation method choices by studying analysts' differing practices on one single firm. Researcher subjectivity should be noted as a limitation for the study, as data analysis involves interpretation.

4. Findings

This chapter presents the findings of the research. Section 4.1. documents findings on valuation methods, with grown preference for enterprise value multiples. The analysts covering Neste Oyj brought up several reasons for why they have chosen a particular valuation method. Drivers identified both supported prior research and enlarged the driver base. However, ESG factors were not found to influence method choices.

Most of the analysts were able to make valuation-related choices freely. Analyst F had limitations in determining the timeframe, due to firm-wide policy extensions and e.g. Analyst B utilized a standard model to input the data to. However, analysts have typically standard models (e.g. for DCF) at their disposal. Four of the six analysts (B, D, E & F) exercised valuation as the sole analyst, except for general discussions on e.g. the macroeconomic environment. Brokerage firms A and C involved multiple analysts in the process. Analyst A was the lead analyst having the ownership of company analysis (stock recommendation and target price). Supporting tasks performed by other analysts included updating the model actuals, keeping track of databases, helping with comments and doing client requests. For brokerage firm C, the ideology was to involve more than one analyst to gain a second opinion. The lead analyst had changed to Analyst C2. Analyst C1 had built the model and still participated in the process. Hence, Analyst C2 had inherited the model from Analyst C1. Analysts B, E and F had also inherited models. Also Analyst D had built his/her model. Working with valuation models were found to be iterative processes, where analysts improve the model over time along with the covered firm's developments. For the purpose of this study, if an analyst has selected a primary method or methods directly linked to the target price, it will be considered fixed.

4.1 Valuation methods

4.1.1 Primary valuation methods used and influencing drivers

Most (five) of the analysts interviewed relied in fixed valuation methods, with four analysts having a single valuation method behind the target price. Analyst A had a fixed approach to

the valuation process, but applied two different methods, one to value the renewables and retail, and another to value the oil products business. Whereas brokerage firm C did not have a fixed method, but the analysts rather applied multiple methods. The analysts of firm C estimated indicative weightings for valuation methods used. Interestingly all of the analysts had differing primary method constructions directly linked to the target price (see table 9, p. 49).

Discounted cash flow models

Prior research has identified the prevalence of PE of multiples and a rise in DCF use as a primary valuation method. Thus, academics have argued for the superiority of the discounted cash flow method in valuations. Only one of the analysts interviewed, Analyst B, used pure DCF as a primary method directly linked to the target price. Analyst A used perpetuity value in valuing the Oil Products through the sum of the parts approach and brokerage firm C considered it as a part of its valuation basket.

> *"It is the DCF-model that is found in the report. If the target price differs significantly from the DCF, then that needs to be explained. In general, the DCF model guides giving the target price. Sometimes the target price can differ quite significantly, but then it is explained by qualitative factors."* – Analyst B

Analyst B has utilized mainly the DCF model in all of the brokerage firms where s/he has been employed at for the last 15 years, even though admitting some difficulties with it fifteen years ago whilst valuing technology companies: *"It was difficult to justify their values, but I managed with it*." Relying on a single method would indicate the method choice to be influenced by personal preferences: the familiarity of the valuation method. However, when asked about the reasons for the choice of method, Analyst B asserted the choice to be primarily based on DCF's applicability across sectors: *"All firms can be valued by the discounted cash flow model."* In addition to its universality, the analyst found DCF to be an industry standard and generally accepted. General acceptance of the method was also linked to the communication perspective in analysts' valuations.

> *"DCF has become a bit like VHS became a standard for videotapes. In good and bad. But it works and everyone understands that it is not the truth, but an opinion. And*

everyone knows what it consists of. To launch a competing valuation model, I have not found it plausible..."
– Analyst B

Whereas Analyst D had a very different take on the use of the DCF model as a primary method:

"It would not go wrong if the target price was tied to the DCF… But currently, when the firm is on a moderate investment period and the balance sheet is strong, I don't see as much relevance for DCF than I saw four to five years ago." – Analyst D

Price to earnings

Surprisingly only Analyst D relied solely in PE as the basis for the target price. Analyst D underlined that the valuation method approach is not stable, but changes when necessary. Even though the approach changes over time if necessary, the primary method directly linked to the target price is explicitly defined, Analyst D's approach is considered to have a fixed valuation method. The analyst finds the situation of the firm and the industry or the market to have an impact on the method choice and thus, asserts some valuation methods to apply better for some firms than others.

"Sometimes we look at peer group figures and sometimes at historical figures. Now it is only PE-based. One should remember that the company was very different five years ago. The valuation model should be built according to how the company looks currently and in two years… For example, 6-7 years ago when renewables was loss-making, the conversation was very different. How can you value the renewable division when you cannot use PE because it does not make profit, but if things go right, volumes rise and margins increase, then in three years we can expect this and this result. – Analyst D

Hence, method limitations played a role when the firm is under a certain situation: loss-making. The analyst (D) continued to elaborate on the applicability of valuation methods: "*For some firms you don't need anything else (than peer analysis), if the market consistently prices the firm according to the European industry level. If you notice that, good. But in Neste's case there really isn't a proper peer group so a firm-specific method needs to be applied*." Thus, it seems that the choice between firm-specific and peer-based valuation methods is influenced by the comparability of the firm under valuation and its peers. As the analyst was asked about potential use of other valuation methods, the influence of the industry or market was highlighted:

> *"I could use sum of the parts – method, but one just needs to be chosen. And in my opinion Neste's result is determined quite directly according to external factors. So, there does not seem to be any large investments or discontinuities in production. So I think it (the valuation) should be constructed starting from the result."* - Analyst D

In a sense, the analyst also bluntly states that one method "just needs to be chosen" and finds it important that the analyst stands behind the valuation method chosen. The analyst asserted s/he could have applied EV/EBITDA instead. The analyst aims at bringing all valuation methods as result-based as soon as the company's business activities are stable.

> *"In my opinion, the renewable division has achieved a certain profit level and the volatility around the result has decreased significantly."* – Analyst D

In addition to Analyst D, only analysts of brokerage firm C considered PE as a part of deriving the target price. Of the four remaining analysts only Analyst F used PE as a secondary valuation method. PE was according to Analyst E more talked about five years ago, but has lost ground to enterprise value based multiples**.** Moreover, Analyst C1 asserted that PE is often in vain regarded as inferior to enterprise value multiples, indicating its decreased prominence in valuations.

Valuation basket, mixed approach

The analysts of brokerage firm C had the most dynamic approach in deriving the target price. Analysts C1 and C2 gave some weight for the PE in their target price, but they also considered for example EV/EBITDA, PB and the DCF. Thus, their target price was based on the mix of the methods, without "fixed" shares of methods affecting the price. In spite of not having a fixed method, of the multiples, EV/EBITDA receives the most attention.

> *"The idea of valuation has been built through multiples. I look what I get through them and compare it to what DCF says. When the results are in the same playing field, then ok. If not, it (the valuation) should be thought again from the start. DCF is a reality check:"* – Analyst C2

Analyst C1 explains how they have arrived at the current approach:

> *"In the case of Neste (the approach) has been chosen, according our subjective opinion, as this is the best way to get a hold of the valuation, because relative valuation is not so good due to the fact that others don't have the renewable business. DCF, on the other hand, in such a volatile business does not really fit, because putting the right parameters in place has such a big role in getting almost anything out of the valuation. And having a volatile result does not fit either. This has to due with our ideology with many other firms too… DCF is very theoretical in our opinion. The weight is on the near future to get something concrete. For industrials P/B is also a good ratio, so we use that to some extent. Also, dividend yield. "* – Analyst C1

Analyst C1 explained with a slight grin that: *"If I would increase the target price of Neste due to DCF, it would ideologically be such a big deal that I would probably be beaten."* S/he continued to explain their approach and EV/EBITDA weighting of the multiples:

> *"EV/EBITDA accounts for the balance sheet structure a bit better [than PE]. At some point there will come worse times also in this business, so it is preferable to have a strong balance sheet than weak… Maybe EV/EBITDA gives a better picture of the cash flows than PE. However, we do use PE. It tells something also, it is mocked for no reason. Even though we say that we use EV/EBITDA the most, it does not have a much higher weighting than PE. If you want to divide in percentages, its somewhere around 25 for PE and 30 to 35 to EV/EBITDA. The difference is so small… the valuation is a subjective estimate of the big picture."* – Analyst C1

Thus, arguments to support the valuation approach and method choice in brokerage firm C are built around the difficulty of relative valuation (comparability to peers), limitations of DCF, ideology of the company, industry, how the methods account for balance sheet structure and cash flows. Overall, brokerage firm C did not have a distinction for primary and secondary methods.

Enterprise value multiples

Along brokerage firm C, Analyst E, F and A built their target price based on an enterprise value multiple. Analyst F had a pure EV/EBITDA multiple determining the target price. The analyst had inherited the valuation model and thus the methodology currently used from his/her predecessor. However, the analyst had developed it further, since the renewables business had changed significantly. Albeit, the analyst seemed to have less independence compared to other analysts, as the timeframe of five years used in the valuation process was extended for

the whole group (brokerage firm). Other analysts had more discretion on the timeframe. Even though Analyst F had enhanced the valuation model, the primary method stayed intact. This could refer to the cost-benefit problem, which the analyst did not explicitly point out. Notwithstanding, the analyst mentioned the habit within the organization when asked about method choice:

> "*Well, it's just that when having discussions with investors they're very much focused on where it's trading at the moment in terms of multiples, it's just easier to have this reference point in mind. Then you have the DCF and you can have a rough idea what kind of discount factor you can use to get that multiple. It is just what we tend to use, the multiple based price target generally. It works quite well in discussions with investors.*" – Analyst F

Yet the primary reasoning behind the current valuation method derived strongly from Investor or customer preferences, and thus, communication. The analyst believed EV/EBITDA is the one investors are primarily interested in when they look at refining stocks. This would also imply that different methods are regarded superior in certain industries, supporting the industry argument. Hence, cyclicality of the business was an argument supporting the valuation timeframe. The analyst did have some discretion partially over the timeframe:

> *"I think it was pretty much the methodology that was used by the previous analyst. I think it's the one most investors look will at when looking at refining stocks ... a bit of time so, what I do in the refining business is I use an average of 5 years cause that gives you a good idea of the true cycle, performance it also includes one major turnaround which takes place every five years. And thinking retail, renewable products business I use a shorter time frame because there is less cyclicality in these two businesses."* – Analyst F

Also, Analyst E had inherited the valuation model from the former analyst covering Neste. This analyst had been covering Neste for less than a year, and thus, had not had time to reconsider the model. The inherited model relied on EV/EBIT as sum of the parts as the primary valuation method. Reasoning behind the multiple choice were few:

> *"The popularity of PE has declined on the way. PE figures were talked about a lot five years ago. Now their use has decreased. Depending on the firm and the sector, one can say that EV/EBIT or EV/EBITDA are the most typical parameters. Of course, the other perspective has been dividend yield or cash flow. They are the other methods that have become more popular. In Neste's case it is not so simple to forecast cash flows. If the*

firm makes big investments, for example, it will shift the figures substantially." – Analyst E

It was impossible to get behind the method choice of the former analyst covering Neste, but Analyst E did mention the market consensus/ trendiness of the valuation method and the effect of the industry or the uncertainty of outcomes: the difficulty to forecast cash flows due to market volatility. Additionally, the analyst pointed out investors' interest in peer groups:

"Customers are interested in peer groups. With what kinds of multiples do they trade." – Analyst E

S/he noted that very different types of valuation methods are used depending on the case, sometimes combining multiple methods as primary. However, in Neste's case Analyst E defended the use of sum of the parts as follows:

"As Neste's businesses are so different, the sum of the parts method has been the best valuation method. If you think about other options, DCF models could be used. If you want to do it simply, that you look at the average valuation of the sector and apply it on the firm level. With Neste you need to take the segments separately. And in this case that is certainly the most sensible/reasonable method." – Analyst E

Interestingly Analyst B argued against sum of the parts by analyzing that, as it does not seem likely that Neste Oyj will sell any of its businesses, it is not plausible to speculate it with sum of the parts:

"Sum of the parts is not too relevant for most of the firms. The assumptions become so firm specific that are used in sum of the parts. It becomes very subjective." –Analyst B

Nevertheless, four of the six interviewed analysts relied on using sum of the parts to build their valuations, due to the differing natures of the businesses. Hence, they reasoned sum of the parts – approach to enable allocating different multiples for differing segments.

Combining EV/EBITDA and perpetuity value

For Analyst A, applying the sum of the parts basis enabled valuing the renewable business and the retail business through an EV/EBITDA multiple and assigning a perpetuity value for the oil

business. Thus, the analyst combines relative valuation and discounted cash flows to gain the final target price for the firm.

> *"Yes, I moved on oil products from a long term DCF to a much more shorter term perpetuity value which is actually a very simple DCF. Taking the average of next 2 years' free cash flow and finding putting that into perpetuity. EV/EBITDA multiple for renewables and retail. Yes, so that hasn't changed, the multiple basis. So, what changed is how I'm getting to the earnings estimate over time. So, the timeframe is just taking next year's earnings and timing that by a number."* – Analyst A

The analyst moved from a long-term DCF to a shorter one, and used to apply the NAV, net asset valuation, method. For renewables and retail, s/he had always applied multiples. When asked in more detail why has the approach been chosen compared to for example PE, the analyst argued as follows:

> *"PV in refining better captures the movement in share price given that fast money often trades off refining margin that can be very volatile…*" - Analyst A

In addition to industry specific characteristics, Analyst A also found the method choice to be affected by the disclosure available and stated: "*it's just what I chose to do."* Which was in a sense supported by Analyst D, who commented that an analyst "just needs to make a choice and stand behind it", as there is no "best" method. Analyst A continued that if necessary s/he might decide to change the approach, but "that would require the work". The analyst found the market cycle to serve as one basis for possible change in valuation approach:

> *"If in renewables there was a change in regulation or more or less uncertainty and in refining if umm… if I saw that there is a change in the cycle of margins... At the moment we've been on the top of the cycle, it appears that we are coming down slightly, but we are still at the toppish of the cycle. The bottom of the cycle is probably... we might be going back there, but we are not there yet. So, in a few years I'd say."* – Analyst A

Table 9 summarizes the valuation methods used by the interviewed analysts. It identifies 1) the primary method or methods used as the target price basis, 2) if the valuation is constructed with the sum of the parts basis, 3) what are the secondary methods exercised and especially, if DCF is applied simultaneously. Building on methods use by analysts, table 10 presents which factors either analysts used to argue for their valuation method choice, or was

identified by the researcher through content analysis. For example, the analyst might not explicitly state that the inherited approach is the reason for using a particular method, but its influencing role can hardly be debated.

	Target price basis		Use of other methods	
Analyst	**Primary method**	**Sum of the parts as construction basis**	**DCF**	**Other**
A	Perpetuity value (DCF) & EV/EBITDA	*Yes*	Partially primary/ No	N/A
B	DCF	No	Primary	Peer group, EV/EBITDA & EV/EBIT
C1&2	Mix of EV/EBITDA, PE, PB and DCF	Yes, partially	Partially primary	Peer group
D	PE	No	Yes	Sum of the parts, peer group, EV/EBITDA
E	EV/EBIT	Yes	Yes	Peer group
F	EV/EBITDA	Yes	Yes	PE, Dividend and cash flow yields

Table 9 Primary and secondary valuation methods identified through research

Factor - Analyst	**A**	**B**	**C**	**D**	**E**	**F**
Trends/Market consensus					**(x)**	
Industry standard		**x**				
Communication/ Customer preference		**x**			**x**	**x**
Habits / Method familiarity		**(x)**				**x**
Company ideology			**x**			
Applicability of valuation method across sectors		**x**				
Comparability of the covered firm and its peers			**x**	**x**		
Industry or market cycle	**x**		**x**	**x**	**x**	
Reflection of cash flows		**(x)**	**x**			
Ability to account for balance sheet strength			**x**			
Inheriting the method from predecessor			**(x)**		**x**	**x**
Cost-benefit-ratio	**(x)**	**(x)**			**(x)**	**(x)**
Valuation method technical limitations			**x**	**x**	**x**	
Information availability	**x**					

Table 10 Factors influencing primary valuation method choices

Summary of the factors influencing valuation method choices

As shown by table 10, the most common factors argued by analysts to support method choice was the industry or the market cycle. To understand the drivers, industry knowledge was found essential. The (x) stands for the result of content analysis of interviewee answers, rather than their explicit indication of the reason while asked why the method was chosen. For brokerage firm C concerning "model inheritance" (x) was applied, as the former analyst continues to take part in the valuation process.

Analysts either build their valuation models themselves or they are inherited from predecessors. The analysts who had built their valuation models themselves had been covering Neste for a relatively long time compared to those who inherited the models. Thus, it seems that when the responsibility of covering Neste is transferred to a new analyst, s/he typically uses the old model, and continues to improve it during their time. Inheritance of the valuation model from a predecessor clearly influences the valuation method choice, as the analysts who had inherited their valuation model were likely to use the same primary valuation method. Thus, this could be seen as a link to the cost-benefit-ratio. If a former analyst has identified and built a functioning model, it most likely is only improved by the current analyst – keeping the primary method intact. Analysts C2, E and F inherited the model from predecessors. However, in the case of brokerage firm C, cost benefit ratio argument was excluded, as Analyst C1 is still participating in the valuation process. Analysts elaborated on covering several firms thus, leaving only so much time per firm valuation. However, the cost-benefit ratio argument seemed to hold additionally for Analyst A, who had constructed his/her model himself/herself. Also, Analyst B, who had inherited the model, but had always used the DCF found it inconvenient to invest in trying to "construct a competing model".

For Analyst B, who had always applied DCF regardless of the valuation target, the habit argument and analyst familiarity with a method gain ground. Company ideology was rare, but was applied by brokerage firm C. The company ideology was strongly linked to other arguments supporting valuation method choices: encompassing them to construct the firm's view. However, Analyst F stated that "they tend to use the particular method in their company". Which could either be an indication of a habit or company ideology.

Trends, industry standards and communication linked in analysts' comments. Communication referred to figures clients were interested in hearing about. Thus, it can be argued, that they are interested in methods that can be seen as industry standard or trendy – having a consensus emerged of either the superiority of a certain method or general acceptance - trends.

Firm comparability was not often mentioned as an underlying reason for method choice. Albeit, all analysts admitted Neste's weak comparability to peers. Analyst B stressed the applicability across sectors, universality, whereas Analyst D elaborated on how to value a lossmaking firm, with some valuation methods showing absurd prices even though the outlooks of the firm look promising: technical limitations. Overall, multiple analysts argued for not using DCF as their primary method due to the method's technical limitations. However, the argument was not their primary reason for choosing a particular method, rather, how they decided to disregard the method as primary.

Reflection of cash flows was not a dominant argument, but was used by the analyst applying DCF and the brokerage firm C, which supported the larger weight of EV/EBITDA over PE for that reason. To support that particular preference over PE Analyst C1 also argued through how methods account for balance sheet strength or weakness.

Interestingly a part of the analysts argued for the application of the sum of the parts method while the other part argued against it using the same basis. The argument against was that even though businesses are very different from each other, it is unlikely that the company will be divided. Whereas the argument for application asserted that due to the difference of the businesses they need to be valued separately regardless of is the company divided in multiple entities or not.

None of the analysts explicitly admitted incentives to play a role in valuation method choices. However, Analyst D elaborated on the context of analysts' work and goals strived for in the valuation process:

"One thing about the analysts' consensus maintained by the company, is that analysts stress their own forecasts all the time to the consensus. It is a good thing if your forecast diverts from the consensus, because then you represent the positive or negative edge. You can bring additional value to investors when you reason why you are 30% under the consensus. You will likely make the investor think that if his/her forecasts are correct, the result will be so and so much better or worse than is thought on the market on average. And from there, one can quickly make a conclusion that at the moment when the result is published, the stock price will shoot aggressively either up or down. Those are the kinds of moments in time that are continuously sought." – Analyst D

Thus, analysts seem to yearn for situations, which guide investors to make decisions regarding acting in the stock market: to acquire or sell stocks – rather than hold stocks. Thus, these actions support activities of the brokerage firms.

4.1.2 Role of secondary valuation methods

Prior research has identified DCF rarely being used alone, but in the case of Analyst B, the role of other valuation methods was primarily to help define the stock recommendation, rather than influencing the target price: other methods were multiples, eg. EV/EBITDA.

"What is more sensible in the case of Neste Oyj is to look at the current value of the stock according to a multiple and to compare it to history... The most important role of valuation multiples, such as the EV/EBITDA, is determining the stock recommendation. Is it sell or buy – or something else… If DCF gives Neste – let's say – 50 and EV/EBITDA is 12, where EV/EBITDA is 6 for peers – then I cannot have a buy recommendation. When Neste is so much more expensive than other refiners." – Analyst B

While Analyst B relied on DCF as the primary method (see table 9) directly linked to the target price, many of the analysts continued to use DCF as a secondary valuation method. A valuation based on the discounted cash flows was seen as a sanity check for relative valuation methods. . Only Analyst A, who applied the sum of the parts approach, claimed that s/he does not use the DCF as a check for multiples based valuations of the Renewable and Retail businesses (oil products was based on a simple DCF). Brokerage firm C, whom considered multiple methods, including DCF, for the target price, explained the popularity of DCF as a secondary method.

"In a way it serves as a check. If I get a valuation that I do not get out of DCF, then there must be an error. IF DCF does not have any upside, then there probably isn't. If

you have a target price, you can check through DCF what should happen for you to get the price out of the model. It helps you to see the price range." – Analyst C1

Analyst E explained DCF to come as a standard to all analysts in his/her brokerage firm. Also Analyst F's comments supported the methods role:

"I do a quick DCF for sanity check for all the different divisions based on their average EBITDA and average maintenance CAPEX." - Analyst F

Analysts using DCF as a secondary method noted the method's limitations, as Analyst E described: *"Everyone knows that in many cyclical industries if you use the DCF you can get whatever figures from it*."

Analyst B also mentioned using peer group analysis as a supporting method, which was not in the report due to Neste's poor comparability with other peers because of its unique renewables division. Most analysts commonly stated low comparability with peers as a challenge when performing peer analysis. This was due especially to Neste's unique combination of the traditional oil and retail business and the renewable business. Regardless of difficulties, almost all analysts exercised peer group analysis as a part of the valuation process. Of the secondary valuation methods, some served only as supporting calculations to analysts, whereas in some cases, supporting methods were visible in their reports or a part of client discussions.

Interestingly of the secondary valuation methods, all analysts who did not rely on an enterprise value multiple as a primary method used either EV/EBIT or/and EV/EBITDA. The interest towards PE had clearly decreased, with only one analyst using it as a secondary method. Dividend and cash flow yields were also looked at, but less. In all, some of the secondary methods served more as communicative to investors, and others to support calculations, as a sanity check to say. Analyst E for example noted, that even though DCF is a supportive, secondary, valuation method for the analyst, many of his/her clients use it as their primary method.

> *"Yes, it's [PE] also something we reference at in discussions with the investors. It's just not the basis of our price target, but usually it will be quite consistent in terms of where the stock is trading relative to history."* – Analyst F

Henceforth, the drivers behind choosing secondary valuation methods, in addition to primary valuation methods, include client preferences. Thus, communication seems to be an important factor in analysts' choices for methods shown also to customers. As an exception of the interviewee's, Analyst A applied no secondary valuation methods in her/his valuation process. However, Analyst A applied peer analysis in multiple generation:

> *"The way I come up with my multiple is through some sort of peer analysis. But the trouble with renewables, is that there aren't any peers. So it's quite tricky to understand what multiple to put on that."* – Analyst A

Information availability was mentioned by Analyst A as a factor that had had influenced method choices in the past. Whereas with the current amount of disclosure and availability of market information, it was not identified to play a role. However, many of the drivers influencing valuation method choices are based on knowledge of target firm related information. Thus, 4.2. discusses the importance of certain information to analysts; without such knowledge, drivers e.g. the industry or market cycle cease to apply for method choices – with the consequence that the analyst could choose an alternative method. Thus, certain information can be considered not only to be inputs in models, but also as subconsciously influencing method choices.

4.2 Information relevance in valuations

Analysts found industry knowledge to play a key role in valuations; understanding the drivers of the businesses. This view held regardless of analysts being either generalists or specialists. However, three of the generalists had already been covering Neste Oyj for a significant time. As industry knowledge underlined, and the industry was identified as a driver influencing method choices, this implies industry knowledge to influence valuation method choices..

> "*I think Refining we have covered for a long time, we have decent grip on how to model it. How we think how to model it and that can be consistent across a range of*

> *companies. The Renewables has been more tricky on how to model it and value it. We... the modeling prices has been quite fluid, it's changed at times."* – Analyst A

Thus, Analyst E challenged the view that from the perspective of accuracy it would be preferable to be a specialist: *"Specialists know the industry better than a generalist like me. But it can also be a negative thing, if one is too much in love with the industry. They might not see what is going on in the big perspective."* Analysts noted valuations to include subjectivity.

Overall, industry knowledge was considered more important in Neste's valuation compared to many other valuations. Hence, the lack of suitable peers was an evident factor influencing valuations, as well as information availability. Information availability was primarily not linked to the choice of valuation methods, but rather forecast accuracy. Even though analysts were content on information availability, feedstock (prices, volumes, split) was one of the main elements of which analysts yearned for more information. Further, lack of information was found to be present for the geographical segment splits. Thus, market related information was the primary cause for uncertainty in analysts' work. However, the analysts understood part of the information they sought to be sensitive and that it might remain outside disclosure. Henceforth, the analysts spent most of their time of Neste's valuation with the renewable products division, as it was found the most demanding segment of Neste Oyj to forecast.

> *"Coming from an oil and gas standing point, it takes more time to get up to speed what the company does. There is no other company like it as well, from a renewable standpoint. The business model is more complex than for other companies. Disclosure has been quite bad, but it has improved over time. There are many variables that can go in to the model, or how earnings are reported. It is the biggest moving part in terms of valuation. The market is putting a high multiple on it. So small changes in Renewables earnings expectations can have a bigger impact on the stock price and investors care about it more than the refining business at the moment."* – Analyst A

Information found important consisted of regulations and tax benefits, price data regarding feedstock and products, refining margins, cost factors and volumes. In addition, utilization rates of the production sites had value relevance. Company websites were seen as one of the most valuation relevant sources for market prices, financial information and the analyst consensus. Market price information from e.g. Reuters or Bloomberg was also important. Other sources of information included sources for regulation changes (e.g. EIA) and analyses

on the market (e.g. EcoEngineers), as well as import information from America. Thus, two analysts used other purchased information sources on top (Datastream, Pira). Much of the information gathering was regarded as routinely. Albeit, analysts noted that when times are calmer, there is some room for more active information gathering.

> "*Well I use Bloomberg to get some of the prices, especially for the US biodiesel business. I also use the US EIA website to get biodiesel production and biodiesel imports, including Neste's biodiesel imports. I also get information from Canadian statistics on Neste's exports to Canada and I also use actually Neste's website to confirm the prices. And you know various news sources for changes in regulation and those kind of things. We also do our own research on refining margins for instance." – Analyst F*

Additionally, as a part of company provided information, analysts continued to highlight the importance of discussions with the investor relations, e.g. to get clarification or missing market prices. However, some analysts used the communication option in a limited manner.

> *"If I have questions I could call the IR. We would speak to management on the quarterly conference calls. Occasionally we host investor meetings with the management, it tends to be investors asking the questions rather than the analyst... Yes they are important, because things happen which it's hard to know what happens and what facts are, that's were they are most helpful."* – Analyst A

> *"Yes, we have had meetings and had discussion. I have not been actively in contact, as there has been no need. Maybe in the future if the need emerges… Of course, there are sometimes silent signals. The discussions add value."* – Analyst C2

Analyst C1 was most sceptic in the information value of management discussions and asserted that the firms message should always be put into perspective:

> *"Especially, when the questions are such that the management must answer very carefully. Most of the interpretations are my own."* – Analyst C1

On top of discussions with company management, Analyst D raised interactions with other stakeholders: Neste Oyj's customers. Interestingly no other analyst raised such communications as an information source. This can be a consequence of resource constraints. Whereas prior research has lifted historical data to give most information about the future,

the analysts clearly found the opposite for the Renewable Products, explaining the weighting on industry knowledge. Retail was found stable and relatively to forecast.

> *"Without it* [industry knowledge], *it is impossible* [to forecast]*. Someone could say that figures are univocal, but the analysts' and the forecasts' biggest function is in the future. To have the ability to follow the correct elements and disregard irrelevant noise could be considered as a talent in itself."* – Analyst D

> *"…for Renewables it is not such a good parameter due to volatility and short history… Let's say that the forecasting and valuation of Oil products is more mechanistic and is based more than usual in historic trends and extrapolating from them. Whereas it is much more challenging with renewables, as historic trends are not reliant enough to forecast the future. It is associated with much regulative problematics."* – Analyst B

However, many analysts, such as Analyst A, stressed history data to serve as an essential base: *"They form a base for forecasting earnings. The valuation is driven by that."* In contrast, Analyst D with a long experience covering Neste Oyj found less relevance for history data:

> *"I scarcely use the history data that the firm produces. It does not serve any other function to an analyst than to perform checks… I said a bit incorrectly that what the company tells about history does not play any role, but naturally the firm's own view of the market. When they do not give numeric guidance, I do use their estimate of the market development. It serves as an assumption in analysis."* – Analyst D

Qualitative factors influenced valuations e.g. through forecasts for most analysts: factored in the valuation. Five out of six analysts found the political situations to influence valuations. Thus, management reliability was seen to effect valuations:

> *"It is the say-do ratio that you form of your opinion of how much the management is on top of the business… It is the track record. If what is said comes true… It influences the multiple."* – Analyst C1

Whereas Analyst A found strategic and governance factors to be reflected in firm performance, and thus embedded through financial performance in valuations: *"No not on the valuation, but management reliability on the story perhaps."*

The information analysts considered relevant for valuations (as inputs to models and influencing assumptions) was clearly linked to firm related valuation method choice drivers. Industry and market related information as well as indications of the firm's financial status were highlighted. Such information is necessary to assess drivers such as the industry, market cycle and comparability to peers. They also have an impact on how analysts assess valuation method characteristics: e.g. in a stable industry DCF limitations receive less attention.

4.3 ESG relevance for analyst valuations and forecasts

All analysts were familiar with the term ESG and had ideas of what it consists of. Analysts identified environmental social and governance information to encompass corporate governance, environmental impacts (through e.g. emissions and the use of wastes and residues), R&D investments and work force related factors: e.g. injuries and absences, investments in personnel and salaries.

> "*Sustainability of business, accountability of management, independence of board, impact on local communities, impact on environment."* – Analyst A

> *"I think it's about the sustainability of the feedstock they use, especially palm oil and what they do generally to reduce greenhouse gas emissions. So that's mainly about the Renewable products business. But also on the Oil products side what they do to reduce the emissions of the refineries. And also, the aspect of corporate governance, especially when you have a state-owned company, and whether it can be run independently of the government. I think that's also part of it."* – Analyst F

Albeit all analysts were familiar with environmental, social and governance information, there was large variance on how it was dealt with in valuations. Two brokerage firms (A and C) had no devoted team or person for ESG- issues. Firm F had one person working part time on the subject. In firms B and D there were no ESG-analysts in equity research, but ESG-analysis was performed elsewhere in the organization. Whereas in firm E, ESG-analysis was performed in multiple parts of the organization.

> *"We have one person who is responsible of this internally, but s/he has many other responsibilities too, so maybe 15% of the entirety. On the private banking side there must be, but I am not able to name anyone."* – Analyst B

However, no analyst used environmental social and governance information explicitly as a direct input incorporated in the valuation model deriving the target price. ESG related aspects could potentially influence the valuation model inputs implicitly through the evaluation of risks or if the firm was likely to face litigation. ESG factors could influence the EV/EBITDA multiple allowed for the firm, or the discount rate. Yet, their influence was considered minimal.

> *"Not very much to be honest. I mean I'm conscious they are important for a number of investors, but it doesn't really impact my valuation. Generally, no impact on stock recommendation, unless we think that there is a major issue around that theme that could make the financial repercussions for the company. That would encourage us to make it more negative. I'd say it's more to do with financial consequences than ESG itself."* – Analyst F

> *"I think they will be important, are they important enough for investors to invest or not to invest in the stock? I think at the moment – no. It doesn't change my opinion on the earnings outlook for the next ten years. It could change my opinion on the discount rate that we should be using. Because Neste is seen good at ESG factors, maybe that discount rate is a bit lower as a result, which could explain some of the share price performance."* – Analyst A

Even though ESG information had little to no impact on the target prices, ESG information could impact e.g. the stock recommendation or be addressed in the analysis. Yet, for example Analyst A asserted ESG factors to have no direct influence in the valuation process.

> *"Can it affect the stock recommendation? Yes. A part of it is explicitly visible in numbers if there are ongoing claims, or if the firm needs to make investments to repair damage caused in the ESG-area... We have screened what the firms have increasingly disclosed on ESG issues during the past five years... When legal or environmental things occur, we inform our clients. They might not show in the firm reports, but are visible for example in the daily issues on market research…"* – Analyst D

> *"If the firm has faced ESG problems, it has been the main driver in taking down a recommendation. Maybe we have been too reactive in it."* – Analyst E

> *"In the near future, we will have an ESG-section in every analysis, which basically incorporates our comments of Neste from an ESG perspective."* – Analyst B

For the analysts utilizing ESG information in the valuation process, the ESG-analysts in the organization were found to bring little additional value on top of analysts' own research. Issues discussed were mainly found to be general or concern the industry rather than the analysis of a specific firm. Analyst E explained: "*when you think about specific firms, we are the specialists, it goes more on our territory*." Only Analyst D claimed to benefit from collaboration within the organization on ESG issues.

> *"I do benefit. There are ESG-responsibles there (private banking), who look at ESG from the investor perspective… We have regular dialogue with them… we (private banking side) buy externally a part of the ESG-analysis."* – Analyst D

> "*These themes are discussed increasingly with clients... And ESG-research is exercised increasingly. Conducting ESG-analysis is very complicated. It demands quite much knowledge to understand where the firm is at. So, industry knowledge is essential, to know how the peers are performing. It's a growing theme. There will be much more focus on it in the future*." – Analyst E

Thus, most analysts asserted ESG issue importance to grow in the future, albeit the issues being currently given little attention. Analysts have not been proactive and development in this area is mostly dependent on the buy-side, client interest. Thus, there was a clear difference in the client interest in ESG issues witnessed by analysts in the UK and in the Nordics. UK analysts found no interest in ESG issues from the client side and where sceptic of future development:

> *"It is hard to predict, it has been very cyclic in most of continental Europe, London and New York. There are small dedicated teams to this but they are small, I think they are slightly bigger in parts of Northern Europe but it still remains quite small. Unless there is a real push for the investment community to really worry about these issues, I don't see it changing… I think we will react to investor base. But we haven't seen that yet.*" – Analyst A

Whereas in the Nordics the issues were increasingly enquired and their future relevance was estimated to grow: *"Now when there starts to be demand, we need to react too."* – Analyst B

> *"The situation will change dramatically during the next five years. Some clients can have ESG weighted indexes. There can emerge ban-lists. Deriving from that if you are a green firm your valuation improves in comparison to peers*." – Analyst E

> *”If the firm performs well in ESG-factors it is a positive indicator, as if ESG-performance is poor, it will sooner or later affect the general opinion of the firm. It will add its mark on the outlooks put forward of the company, portray the operating policy and brand. No one affords giving competition lead. Firms with poor ESG-performance are not liked, as it excludes investors and is associated with sanctions. No one wants to buy an ESG-risk.”* – Analyst D

To summarize, ESG-issues had only secondary importance regardless of the context of renewable energy and oil sectors. There was no indication of ESG influence valuation method choices and to only implicitly influence target prices in most cases. Nordic analysts disclosed the possibility of ESG-factors having an effect on stock recommendation. Thus, ESG-relevance was seen to grow in the Nordics: 1) Analyst D covers ESG-information in reports and has thought about adding an ESG-screening to the valuation process: a proper dual-decision process, 2) Analyst B elaborates adding an ESG section in reports in the near future and 3) Analyst E asserts ESG-issues to affect stock recommendations. UK analysts disregarded ESG information from decision-making, excluding cases of litigation: applying a single decision-model. Collaboration within brokerage firms between stock analysts and ESG-analysts was seen to provide little benefit for valuations, apart from Analyst D.

5. Discussion

In order to respond to the primary research question 'What affects analysts' valuation method choices directly linked to a firm's target price', the supporting topic of what are the primary valuation methods applied was first investigated.

Valuation method preferences

There has been research on the most prominent valuation methods used by analysts, testifying changes of preference over time (see e.g. Imam et al., 2008; Demirakos et al. 2004; Arnold & Moizer, 1984). Prior research has documented valuation method preferences changing from purely relative valuation methods to include more sophisticated discounted cash flow methods, DCF to be precise. PE has been identified as a one of the dominant methods, having enterprise value multiples gain some ground (Demirakos et al., 2004; Imam et al., 2008). Further research has documented the growth of DCF as a primary method in valuations, typically not applied as the sole method. Whereas while multiples were applied as primary methods, the discounted cash flow methods were hardly utilized. Hence, the recent study of Imam et al. (2008) found sophisticated methods more dominant as primary methods. (Imam et al. 2008)

However, the findings of this study contradict with Imam et al. (2008) on method use. DCF was applied as the primary method only by three analysts, of which Analyst A applied it only on the oil business and Analysts C1 and C2 considered it as a part of their valuation basket. Contrasting Imam et al. (2008), the Analyst B applying DCF as primary relied solely on it as the target price basis, having diversions from the suggested price derived from DCF explained by qualitative factors. Yet the stock recommendation relied on secondary methods – multiples – which brings partial support to Imam et al.'s (2008) findings. Notwithstanding, the Analyst A applying DCF on the oil business did not consider relative valuation methods along it to value the division. Overall DCF dominance associated combining relative valuation methods does not hold in this study.

The primary argument for analysts excluding DCF from the primary method was due to technical limitations of the method and uncertainty of outcomes in the industry. The challenges were also acknowledged by Analysts C1 and C2, considering it as a part of multiple methods. Thus, technical limitations and the difficulty to forecast cash flows due to uncertainty of outcomes are interlinked. Albeit, DCF was continued to be used as a secondary method and thus, the study acknowledges its prominent role in the valuation process as identified by Demirakos et al. (2004) and Imam et al. (2008).

Hence, relative valuation based multiples were found to dominate as primary methods. Five out of six analysts applied relative valuation methods in deriving the target price. Thus, contrasting with prior evidence (see Demirakos et al., 2004; Imam et al., 2008), the study suggests a shift in preferences: enterprise value multiples (EV/EBIT&EV/EBITDA) substituting PE as the mainly applied multiple. Demirakos et al. (2004) suggested comparative valuation methods to be more popular in stable industries, whereas analysts interviewed underlined the volatility and uncertainty still inherent in the renewable industry. Thus, relative valuation methods were found to be popular regardless of instability in the industry: partially due to national incentive programs. Interestingly only one of the analysts applied Price to Book as a part of their valuation process, which Imam et al. (2008) found to be prominent among the valuations of industrial firms. It should be noted that method preference findings may not apply in other sectors.

To continue, while Imam et al. (2008) found relative valuation methods applied solitarily as primary methods, the evidence suggests sophisticated valuation methods serving a secondary role of a sanity check. If the outcome of relative valuation methods diverts significantly from DCF values, analysts tend to reassess their assumptions and calculations. Thus, DCF was found to be applied by clients.

Factors influencing valuation method choices

Even though the studies have identified possible reasons for method choice, few studies have focused on the factors affecting analysts' choices of these methods (Flöstrand, 2006). Previous research has interviewed analysts from one or multiple sectors, based their findings on the

content analysis of analysts' reports or statistical analysis (see Campbell & Slack, 2011; Flöstrand, 2006; Demirakos et al., 2004, Imam et al., 2008; Day, 1986). Thus, findings have incorporated both theoretical suggestions and empirically proven evidence. However, the focus on this study is a deep-dive in assessing why analysts choose different valuation methods to value the same company, Neste Oyj. Consequently, the study seeks to test theoretical suggestions and contribute to knowledge of empirical evidence on method drivers.

Henceforth, the primary research question of the study ponders what influence analysts' valuation method choices. The findings on valuation method choice can be divided to three groups: 1) drivers supporting prior evidence, 2) theoretically suggested drivers that the study tests and 3) newly identified drivers. The groups will be assessed subsequently.

Firstly, supporting Flöstrand's (2006) statistical analysis, the study did not find indications of the relative prices argument. The evidence strongly supports prior observations of contextual drivers such as influence of client preferences, trends and market consensus, the market cycle and industry, technical limitations of methods and the uncertainty of outcomes. Client communication and client's interests were often mentioned, both in discussions regarding primary and secondary valuation methods, as well as the influence of industry and market cycle related factors. Uncertainty of outcomes was reflected in analysts corroborations of the difficulty to forecast cash flows in the renewable energy sector. Further, technical limitations of methods affecting valuation method choices eccoed strongly through the interviews. Technical limitations of methods was often highlighted as one of the main factors for why discounted cash flow models were not considered as primary valuation methods. Especially DCF's inherent flexibility, which allows gaining significantly diverting outcomes depending on inputs, was seen as it's stumbling block.

Secondly, the study found signs on theoretically suggested drivers. Even though analysts did not raise the theoretically suggested driver of incentives as main influencers for their choices, analyst D elaborated on how situations are sought, were the analyst's opinion diverts the consensus. Consequently, it was seen that when the firms' result will be disclosed the share price either drops or jumps. This enables the analyst to encourage the client to act on the equity market before the release. Thus, it can be interpreted that the incentives of analysts,

bringing sales to the brokerage firm as a whole through equity research, influence analysts' choices in the valuation process. Information availability was rarely stated as a factor influencing valuations within the context of Neste Oyj's valuation, notwithstanding one analyst noted its effect on valuations earlier when there was less disclosure on the renewables side. The familiarity of a method was supported through evidence of an analyst applying the same valuation method in all valutions regardless of firm sector or other firm related aspects. Further, the cost-benefit-ratio, was quite directly stated as a influencing driver. This was true for those analysts, who had constructed the valuation model themselves and was highlighted especially in cases where the analyst had inherited the valuation model used.

Thirdly, newly identified drivers were found, such as the influence of inheriting a model from a predecessor. Most analysts that had inherited the valuation model had kept the valuation method intact. Other newly identified drivers included the influence of firm's ideology, method applicability across firms (i.e. method application universality) and comparability to peers, a company specific factor. Moreover the following drivers that can be classified under technical limitations were reflection of cash flows and the ability to account for balance sheet strenght.

Supporting Imam et al. (2008) the findings provide clear evidence of analysts considering multiple factors, which serve as drivers, in valuation method choices. Accordingly, the drivers include both contextual and method characteristics related factors corroborated by analysts' testimonials and identified by analyzing the interviews.

A framework for valuation method choice drivers

Regardless of research on the equity market and sell-side analysts, there have not been attempts to conceptualize the decision-process related to method choices. Research has identified different decision-making processes – dual-decision process or the single-decision process – and different valuation approaches. Ramnath et al. (2008) constructed a framework portraying the operating environment of analysts encompassing underlying factors such as incentives and regulation, influence of decision-making, experience and information, the outputs of analysts' work and thus market effect. Yet, it fails to reflect a deeper representation

of factors influencing analysts, especially drivers for method choices. Thus, this research has attempted to conceptualize analysts' valuation method choice drivers through the identification of valuation methods and approaches applied and the reasons why analysts choose valuation methods.

Figure 4 visualizes the framework of valuation method drivers developed in this research. The framework presents explicitly stated and implicitly identified drivers through analysis for valuation method choices. The drivers identified through analysis of the interviews are grouped as follows 1) employer related drivers, 2) market deriving drivers, 3) method characteristics and personal preferences and 4) firm specific drivers.

The first group represents underlying drivers projected on analysts by the employing firms. This interpretation comes from the testimonials of analysts C1 and D. According to C1 the company ideology contradicts with choosing DCF as the primary method; the choice would not be appreciated within the firm. Analyst D explains analysts to continuously seek situations

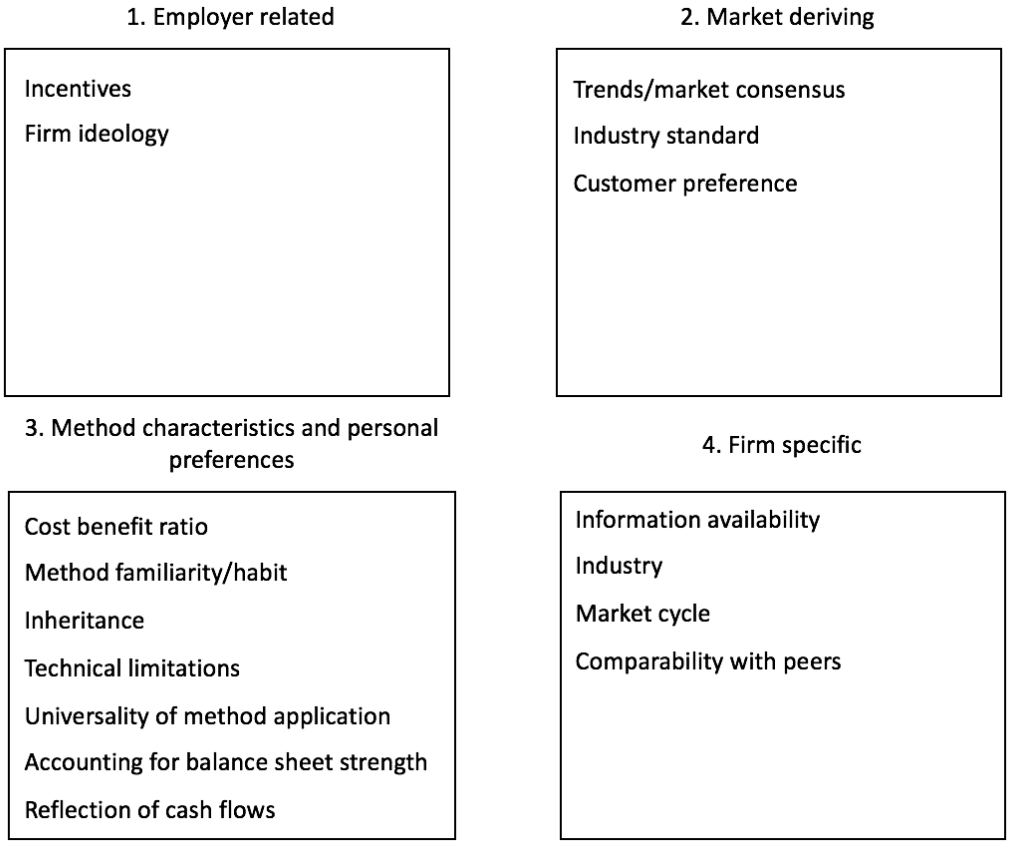

Figure 4 Groups of method choice drivers

in which the target price diverts from the consensus estimate, encouraging clients to act on the stock market.

The second group encompasses drivers emerging from the market: customer preferences and market consensus, consisting of trends and consensus of methods considered as industry standard. As Analyst E states that enterprise value multiples are currently the most popular methods and certain methods to be enquired by clients.

The third group considers method characteristics (technical limitations, universality of application, ability to account for balance sheet strengths and reflection of cash flows) and analysts' personal preferences (habits or familiarity with a method, and inheritance of a model associated with the cost benefit ratio). Even though analysts identified the buy-side to often apply the DCF, its technical limitations were seen to limit its applicability as the primary method. Further, analysts' own preferences clearly influenced method choices.

The fourth group represents drivers arising from the target firm of valuation: industry related and company specific issues. Analysts described situations, in which e.g. particular valuation methods cannot be utilized as primary methods, such as due to company specific factors, its current financial situation or comparability with peers, and industry related factors, encompassing volatility and market cycles to name a few.

The framework should be considered solely as indicative to help understand the driver-environment of analysts' valuation method choices. Thus, acknowledging the sample size, the framework cannot be generalized. Further, the primary function of this interpretation serves to support the illustration of the phenomena, rather than to present a solid framework considered as universally proven. Additionally, the groups can be challenged and additional drivers identified. Hence, the groups are not intended as mutually exclusive. The framework does not take any stance on the strength of drivers or groups of drivers or how analysts weight them as a part of their decision-processes.

Many of the drivers influencing valuation method choices are based on the knowledge of target firm related information, especially concerning the industry, market cycle and financial

state of the firm. These topics were highlighted by analysts as most relevant information, even though not all analysts pointed out the drivers the information links to. An analyst may potentially choose an alternative valuation method with the circumstance of lacking knowledge: for that analyst drivers based on certain information do not exist. Although it should be acknowledged that the analysts interviewed in this research have all been identified in Neste Oyj's investor relations webpage, who thus have through their reports demonstrated an adequate understanding of the industry. To continue, information does not only serve as model inputs, but also subconsciously influences valuation method choices through firm-related drivers.

The role of ESG in renewable energy valuations

Secondarily, additional findings the study sought to contribute to the understanding on the role of environmental, social and governance information in the context of renewable energy valuations. However, regardless of analysts covering oil & gas industries having a tendency to consider ESG information more often (Cerin, 2010), environmental social and governance information was not found to influence valuation method choices in the renewable energy sector. Albeit, there was differing perceptions on ESG information valuation relevance in UK and the Nordics.

The results of the study supported prior research (e.g. Nielsen and Noergaard, 2011 and Campbell & Slacks, 2011) on the current value relevance of ESG information in valuations and analysts' perception of difficulties associated with quantification of the future materiality and comparability of ESG-factors across firms and industries. ESG-information did not impact the target price in valuations, but would implicitly influence model inputs (e.g. through the discount rate). ESG information was only factored in valuations when the effects of issues materialized: through litigation. However, contrasting Campbell & Slacks (2011), who found analysts to disregard ESG-consideration, the empirical evidence testified especially Nordic analysts to be more likely to consider ESG-information in their analysis and to have the ability to affect the stock recommendation, supporting the findings of Luo et al. (2015); implying ESG information to be valuation relevant.

Thus, analysts applying ESG-information on stock recommendation formulation applied a dual-decision model, identified by Nielsen & Noergaard (2011). Further, especially Nordic analysts indicated ESG-relevance in valuations to grow considerably in the near future, whether or not ESG information were to be incorporated into financial evaluation. They found the increase in applying a dual-decision model more likely through the utilization of ESG screenings. While UK analysts were skeptic of ESG-future relevance for sell-side analyst valuations – in line with Campbell & Slack (2011). Yet all analysts identified the future of ESG-information valuation relevance to be mainly tied to customer preferences and admitted the brokerage firms to be reactive on the subject. Most of the analysts did not perceive collaboration with the brokerage firms' ESG-analysts as valuation relevant. The collaboration was on a more general level. Thus, analysts considered themselves as specialists regarding the firm under evaluation: ESG-analysts did not possess such deep insight. Only one analyst benefited from the discussions; however, ESG-analysis and practices were further developed in the firm. In all, even though there was a clear difference on the perceptions on UK and Nordic analysts, ESG information played only a secondary role in valuations.

6. Conclusion

The primary purpose of the study was to shed light on analysts' choice of valuation methods. The research question 'What are the drivers behind analysts' primary valuation method choices directly linked to a firm's target price?' was assessed by first mapping currently used methods and secondly by investigating the rational for the choices. Secondarily the research aimed at building knowledge on the role of environmental, social and governance information in renewable energy sector valuations. ESG information relevance has gained some research both for and against it (see Campbell & Slack, 2011; Nielsen & Noergaard, 2011)**.** Thus, with these goals, the study sought to contribute to the understanding of the equity market context within which accounting manifests.

The main findings of the study were as follows. The application of PE as the primary method directly linked to the target price has experienced inflation, having been subtsituted by enterprise value based multiples (EV/EBITDA & EV/EBIT). Relative valuation was supported by secondary valuation methods, of which DCF served mainly as a sanity check. Prior research has witnessed the rise of sophtisticated valuation methods. Half of the analysts applied DCF at least partially as a primary method. Contrasting to prior research, discounted cash flow models were not considered dominant. Thus, two analysts applying DCF as the primary valuation method relied entirely on it (one for the valuation of the whole firm and the other for valuing Oil Products), contrary to prior research that suggests DCF rarely to be entirely relied upon in target price formulation. However, supporting prior research one analyst applied relative valuation to come up with the stock recommendation.

The valuation method choices made had several drivers influencing. Prior research has presented theoretical suggestions and empirical evidence on drivers. Flöstrand (2006) tested accumulated theoretical assumptions through statistical analysis. However with the aim of studying behavior, Hirsjärvi and Hurme (2011) argue for the qualitative approach. Statistical analysis may be unable to address all necessary drivers to understand analysts' decision-environment and the underlying decision-processes, which might not be reflected on analysts reports. Albeit Imam et al. (2008) presented empirical evidence on valuation method drivers,

they asserted for the continued demand for research in the area. Hence, the study sought to test theoretical assumptions and contribute to research by increasing empirical evidence of valuation method choice drivers. The study did not find any evidence for the relative prices argument, supporting Flöstrand (2006). However, the findings indicate the existence of theoretically proposed drivers: cost-benefit-ratio and familiarity with a method. The influence of inheriting a model from a predecessor was closely linked to the cost-benefit-ratio. The study also provides signals of analysts' incentive and information availability influence. The evidence additionally supports prior observations of the influence of client preferences, trends and market consensus, the market cycle and industry, technical limitations of methods and the uncertainty of outcomes. The research also identified drivers not covered by earlier research: the influence of firm's ideology, method applicability across firms and a company specific factor: comparability to peers. Moreover drivers related to technical limitations were identified subsequently: reflection of cash flows and the ability to account for balance sheet strenght.

As Imam et al. (2008) earlier noted, the decision-environment that analysts face is multidimensional, having various drivers affecting choices made. The drivers were attempted to be grouped as follows 1) employer related drivers arising from employer expectations and incentives, 2) market deriving drivers, client preferences and market consensus, 3) method characteristics and personal preferences and 4) firm specific drivers.

The information highlighted by analysts as relevant inputs in valuation models and influencing subjective decision-making in valuations served also as the basis for firm specific drivers. Overall analysts corroborated the importance of industry knowledge, market and firm specific information in valuations, even though not all explicitly expressed the influence of the firm related drivers identified in the study.

Additionally, the interest of this study was to contribute on the knowledge of the role of ESG information in valuations within the context of renewable energy sector. There were no indications of ESG information having an impact to valuation method choices. Environmental, social and governance information was seen to continue to gain ground in the future. Yet, supporting prior research analysts do not explicitly consider ESG information as inputs in

valuations; it is not seen to have direct value relevance. Likely litigation presented an exception, but it was accounted for solely due to the materializing financial consequences. The application of ESG-information in the valuation process differed between UK and Nordic analysts, where UK analysts disregard ESG information. For Nordic analysts, ESG information could influence stock recommendations and might be discussed in analysts' reports. However, analysts did not perceive collaboration within the brokerage firm with ESG-analysts to benefit the valuation process.

The research has sought to contribute to valuation research and address the research gap in understanding analysts' valuation method choices. In addition to corroborating prior evidence on valuation method drivers, the study found indications for theoretically suggested drivers and identified new drivers. Thus, the study has attempted to visualize the decision-processes by constructing a framework, through which the further scrutiny of the phenomena could be indicatively exercized. Earlier lack of such frameworks may be explained by the few studies in this area. The framework groups drivers for analysts' valuation method choices under four parent groups to represent their influence on method choices. However, the framework is intended as indicative. It does not argue for mutual exclusiveness of groups or the identified drivers to encompass all existing. Additionally, the research sought to contribute to valuation research by clarifying ESG role in analysts' valuations, which had been debated both for and against. Regardless of the context of the industry, ESG issues are considered secondary. The future role of ESG in valuations is mainly determined by investors.

The research may provide interesting insights for companies covered by analysts in understanding the playing field, albeit interaction occurs between firms' managements and analysts. The importance stems from equity market actors, the main consumers of analysts' reports, having influence over firms' managements' decision-making on internal issues (Imam et al., 2008).

As the research was conducted as a case study, limitations of the study exist inherently. As a case study, the results cannot be statistically generalized. Albeit statistical generalization was not the target of the study, through indepth scrutiny the study has contributed to understanding the analysts' decision environment. Further, due to the limited sample size the

results cannot be interpreted as the universal, but merely as indications of the phenomena through the analysis of one case company. Yet, csae studies enable contextual generalization. It has served to test theoretical suggestions and prevalence of prior empirical evidence. However, as the sample consisted of only analysts identified on Neste Oyj's investor relations page, it disregards other potential analysts covering Neste.

Nonetheless, possible research avenues remain to be explored. As a clear avenue for future research the author suggests enlarging the sample size, as to interview a larger amount of analysts covering the particular firms or industries and to focus primarily on their valuation method choices. Alternatively, possible valuation method choice driver differences could be studied comparing those of analysts' identified on firms' investor relations sections in websites to those not mentioned. The changes in valuation method preferences may be industry specific, as the industry was underlined as an influencing factor in valuation method choices. Thus, current valution method preferences should be further studied by scrutinizing analysts covering various sectors. Additionally, as only hints of possible incentive influence was witnessed, an interesting research avenue would be to explore in more depth the incentives argument in analysts valuation method choices, already Flöstrand (2006) suggested in investigating the link between analysts' experience and valuation behavior.

To continue, even though the research focused on method choices influencing the target price, it also touched upon the formation of the stock recommendation. The study gave indications of differing alternatives in the exercize: using multiples, having qualitative factors influencing and the impact of the target price. Yet an interesting research avenue remains in exploring the processes of stock recommendation formulations, how is the stock recommendation derived from the target price?

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Appendix

Interview protocol

Interviewee background

- Tell about your background?
- What are the industries you cover? Specialized in oil & gas (or renewable) or generalist?
- How long have you been covering Neste Oyj?
- What is the size of your team
- What about task division?
- Who takes part in the analysis? What are other analysts' roles?
    - Interviewee the sole participant or multiple people, if so who?

Valuation related:

1. In your valuation and information gathering what is the weighting between Renewable products, oil products and retail divisions?
    - How would you divide time consumption?
2. Do you estimate turnover and operating income development of Renewable Products, Oil Products and Retail by the same manner?
3. How does (Finnish) state's ownership affect your valuation?
4. Are there industry specific factors needed to be taken into account in the valuation process? Neste specific? Can you name these factors?

Information: what is relevant for valuations and forecasts?

5. What are the main sources of gathering information for models and decision-making?
    - How routinely is information gaterhing? Active gathering (communication with company management, e.g. face-to-face disclosures and gathering data) or inactive (pops in front of eyes)?
    - How much do you rely on company IR material compared to other sources?
    - Can you elaborate what information do you find useful in the Neste website?
    - What about history data?
    - Are there other sources?
    - What prices do you refer to on Bloomberg?
6. What kind of news is considered as relevant and usable information?
    - How do you decide what is considered relevant and usable?
7. Do you consider the reference margin for your valuations, if not why?
8. Do you have assumptions of the content of the additional margin? Please elaborate?
9. How is renewable products seen in your valuation report?

ESG

10. What is the value of environmental, social and governance disclosures (ESG)?
    - To what extent are they used? Why? If not, why?
    - How are they valued or considered in models?
    - How do you see their future relevance as information input to valuations and forecasts?

11. Is there information exchange with the ESG team of the organization (only applicable if ESG team exists)
    - Continuous or seldom?
    - What is the perceived value of these interactions to your valuations?
    - Why so?
12. Can you elaborate is there increasing relevance indicated from the buy-side?
13. How do you see the development of ESG-factor relevance in the future?
14. Overall do you perceive you have enough access to data for your valuations?

Models: what kind of models are used?

15. How has your model been developed or come into being?
    - Have you built or developed models?Spreadsheets or software?
16. What kind of categories are in the model and how what are their weights?
17. What types of inputs does your model have?
18. What is the analysis/valuation timeframe? How was it decided?
19. What valuation method is directly linked to the target price?
20. Why did you chose the method?
21. How long has the method been used?
22. Have you considered other methods? Why or why not?
23. Is Neste's valuation based on multiple valuation methods?
24. If multiple models used, weighting in decision-making?
25. Do you account for market volatility in your valuations? How do you come up with the discount rate?
26. How do you estimate the turnover and EBIT development for OP and RP?
27. Do you account for SG&A on individual business level in your valuations?

Other

28. Are there other qualitative factors influencing the valuation of Neste?
29. Have you factored the qualitative factors in the valuation method?
    - (e.g. Listed in Helsinki compared to elsewhere; dividend distribution more often than once a year)
30. How important do you see industry knowledge in decision-making?
    - Are there qualitative factors "outside" valuation model influencing stock recommendations?
        - E.g. coming from one-on-one calls with company management?
31. What are the biggest challenges in the valuation of Neste?
32. What additional material would you wish the company to provide to further support your valuations?
    - Is there material provided by Neste that you find irrelevant?
    - Are there ratios or other measures disclosed by peers that you would wish Neste to disclose?
    - Is there some other way by which the company investor relations and management could otherwise serve you better?
        - (e.g. less formal conference calls more often; BoD access)
33. How does Neste differ from peers in valuations?
34. How do you evaluate the reliability of Neste's management? Do you bring such qualitative factors to your analysis? If so, how?